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United States
Department of
Agriculture

Forest Service

Pacific
Southwest
Region

January 1994

# Threatened, Endangered and Sensitive Plant Program

## Summary of FY 93 Accomplishments

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## USDA-FOREST SERVICE--PACIFIC SOUTHWEST REGION (CALIFORNIA)
## THREATENED, ENDANGERED AND SENSITIVE PLANT PROGRAM
## SUMMARY OF FY-93 ACCOMPLISHMENTS

The Region 5 FY-93 budget direction to the Forests stated:

> **"The Region was directed to implement a regional and forest level Threatened, Endangered, Sensitive species and botany program. This includes: surveys and inventories, biological evaluations in the NEPA process, monitoring and implementation of recovery plans and species or habitat conservation strategies as part of the forest plan process, habitat restoration and reintroduction where appropriate, and sponsorship and use of rare plant data base systems, such as the state Natural Heritage programs. Forests are encouraged to develop partnerships and to participate in the Forest Service public outreach and education program, "Celebrating Wildflowers." Forests should continue to hire TES botanists and maintain staff already in place".**

### MESSAGE FROM THE REGIONAL BOTANIST

One of the tasks that I look forward to complete at the end of the year is compiling this accomplishment report from the 19 national forests in the Pacific Southwest Region. It provides me an opportunity to:

1) evaluate our various botany programs;
2) share these insights with the Regional Forester and Forest Supervisors; and
3) identify new and innovative ways that botanists are assisting in natural resource management, conservation, and botanical awareness of our unique and highly endemic flora.

I also want to acknowledge the numerous contributions of our extremely talented permanent and seasonal botanical workforce, our partners, and especially to all of the volunteers who donate their time, energy, and passion to advance our botany programs. Thanks to all of you for making a difference toward the long-term conservation and management of our national forests.

### PROGRAM HIGHLIGHTS

o Hired ***64*** seasonal botanists to do sensitive plant survey work in FY 93.

o A combination of funding sources from cooperators, other resource functions, and appropriated dollars for the threatened, endangered, and sensitive plants comprise the R-5 program. During FY 93, the total threatened, endangered, sensitive plant and botany program was $ ***1,921,139***. Cooperators through Challenge Cost-Share etc. provided $ ***299,762*** in funding, supplies and/or labor.

o Increased program visability and advanced sensitive plant conservation with a ***16***% increase in funding over FY 92 to do sensitive plant work.

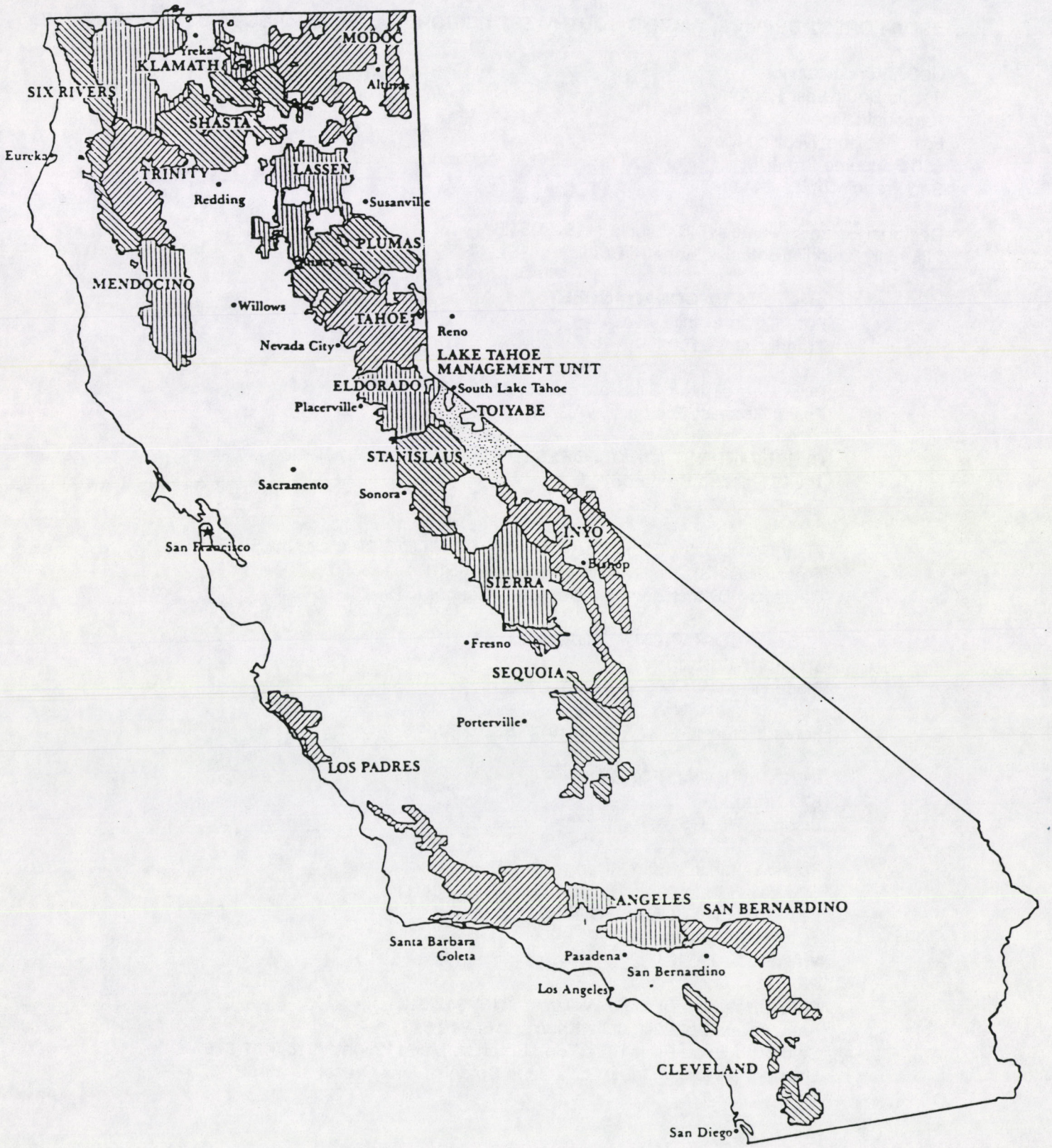
o Acres surveyed in FY 93 were ***458,603***. This survey work on the National Forests yielded ***340*** new occurrences involving **77** of the 302 sensitive plants listed on the Region 5 list. All field survey forms are provided to the California Natural Diversity Data Base as outlined in our Memorandum Of Understanding with the Department of Fish & Game.

o Region 5 currently has 7 plant species federally listed under the Endangered Species Act of 1973 (as amended). The carbonate endemics package comprising 5 plants was proposed in the *Federal Register* on November 19, 1991 and still awaiting a final rule. The US Fish & Wildlife Service completed listing packages for several sensitive plants occurring on National Forest System lands in FY 93. However, these proposed listing packages have not been published in the Federal Register as of the end of the fiscal year.

o Several sensitive plants on National Forest System lands in Region 5 are listed under California state law. Twenty-three state endangered and two state threatened species are listed under the California Endangered Species Act of 1984, and 28 species are listed as rare under the authority of the California Native Plant Protection Act.

o Volunteers also added significantly to the development of the sensitive plant program. This included a variety of groups including The Nature Conservancy, several chapters of the California Native Plant Society, Laguna Mountain Volunteer Association, CDFG employees, and several professors and graduate students. In addition ***12*** individuals donated a total of ***2,261*** hours of service to the Region 5 plant program.

o Continued into our fourth year of a signed Memorandum of Understanding with the California Field Office of The Nature Conservancy, The Rancho Santa Ana Botanic Garden, and the California Native Plant Society to work cooperatively toward native plant species habitat conservation issues.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CLEVELAND
San Diego

## USDA-FOREST SERVICE, PACIFIC SOUTHWEST REGION (CALIFORNIA) BOTANICAL PERSONNEL

UDSA-Forest Service
Pacific Southwest Region
Regional Office
Fisheries and Wildlife Mgmt.
630 Sansome Street
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Regional Botanist: James R. Shevock: (415)-705-2691
Planning Biologist/Botanist: Anne F. Bradley: (415)-705-2882

**ANGELES NATIONAL FOREST**
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Arcadia, CA. 91006

Plant Coordinator: Bill Brown: (818)-574-1613
Forest Botanist/Ecologist: VACANT

**CLEVELAND NATIONAL FOREST**
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San Diego, CA. 92128

Plant Coordinator/Ecologist: Tom White: (619)-673-6180 ext. 3055
Forest Botanist: Kirsten Winter: (619)-673-6180 ext. 3056
Descanso District Botanist: Deveree Volarino: (619)-286-9882

**ELDORADO NATIONAL FOREST**
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Placerville, CA. 95667

Forest Botanist: Mike Foster: (916)-622-5061

**INYO NATIONAL FOREST**
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Bishop, CA. 93514

Forest Botanist: Brian Miller: (619)-873-5841

**KLAMATH NATIONAL FOREST**
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Yreka, CA. 96097

Forest Botanist: Barbara Williams: (916)-842-6131
Asst. Forest Botanist: Julie Knorr: (916)-842-6131
Salmon & Scott River RD's Zone Botanist: Marla Knight: (916)-467-5757
Ukonom & Happy Camp RD's Zone Botanist: Max Creasy (916)-627-3291

**LAKE TAHOE BASIN MANAGEMENT UNIT**
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South Lake Tahoe, CA. 96150

Plant Coordinator: Kathy Erwin: (916)-573-2600

**LASSEN NATIONAL FOREST**
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Susanville, CA. 96130

Forest Botanist: Beth Corbin: (916)-257-2151

**LOS PADRES NATIONAL FOREST**
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Goleta, CA. 93117

Plant Coordinator/Ecologist: Mark Borchert: (805)-683-6711
Forest Botanist: Karen Danielsen: (805)-683-6711

**MENDOCINO NATIONAL FOREST**
420 East Laurel St.
Willows, CA. 95988

Forest Botanist: Dave Isle: (916)-451-3316

**MODOC NATIONAL FOREST**
441 N. Main St.
Alturas, CA. 96101

Plant Coordinator: Sydney Smith: (916)-233-5811

**PLUMAS NATIONAL FOREST**
P.O. Box 11500
159 Lawrence St.
Quincy, CA. 95971

Forest Botanist: Linnea Hanson: (916)-534-6500
Milford District Botanist: Stacy Scott: (916)-253-2223

**SAN BERNARDINO NATIONAL FOREST**
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San Bernardino, CA. 92408

Forest Botanist: Melody Lardner: (714)-383-5588
Asst. Forest Botanist, Big Bear District: Maile Neel (714)-866-3437

**SEQUOIA NATIONAL FOREST**
900 W. Grand Ave.
Porterville, CA. 93257

Plant Coordinator: Steve Anderson: (209)-784-1500
Zone Range Conservationist/Botanist: Pam Brown: (805)-548-6503

**SHASTA-TRINITY NATIONAL FOREST**
2400 Washington Ave.
Redding, CA. 96001

Forest Botanist: Julie Nelson: (916)-246-5222

**SIERRA NATIONAL FOREST**
1600 Tollhouse Rd.
Clovis, CA. 93612

Plant Coordinator: John Lorenzana: (209)-487-5653
Forest Botanist: Joanna Clines: (209)-487-5155

**SIX RIVERS NATIONAL FOREST**
1330 Bayshore Way
Eureka, CA. 95501

Plant Coordinator/Ecologist: Tom Jimerson: (707)-441-3561
Forest Botanist: Lisa Hoover: (707)-441-3632

**STANISLAUS NATIONAL FOREST**
19777 Greenley Rd.
Sonora, CA. 95370

Plant Coordinator: Tom Beck: (209)-532-3671
Groveland District Botanist: Jennie Haas: (209)-962-7825

**TAHOE NATIONAL FOREST**
631 Coyote St.
P.O. Box 6003
Nevada City, CA. 95959

Plant Cordinator: Donald Behrens: (916)-265-4531
Forest Botanist: Kathy Van Zuuk: (916)-265-4531

**ANGELES NF** **********

**1. Describe the botanical expertise and workforce on your forest.**

Currently, the Forest is without internal botanical expertise. The Forest Ecologist/Botanist position has been vacant for over a year now and it is uncertain at this point if the position will be filled due to reduced budgets and Region/Forest downsizing efforts currently underway. The Forest Biologist is serving as Sensitive Plant Coordinator/Program Manager. As in past years, the Forest relies heavily on the botanical expertise of Rancho Santa Ana Botanic Garden to accomplish project level sensitive plant surveys, monitoring, development of species management guides, etc.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93.**

Under Memorandum of Agreement (MOA) with Rancho Santa Botanical Gardens, sensitive plant surveys were conducted at 2 project locations totaling approximately 3,729 acres. In addition, approximately 25 acres were surveyed as part of active monitoring programs for *Claytonia lanceolata peirsonii*, *Dudleya densiflora*, *Mahonia nevinii* and *Lilium parryi*.

Nine (9) individual project sites totaling approximately 688 acres were inventoried in-house for sensitive plants.

Seven potential exchange parcels were inventoried for their biological resource values as part of the Elsmere Land Exchange project. These sites were not addresses in the Elsmere BE which focused on Forest Service land only. A total of 2,141 acres were inventoried. This work was completed by Dames and Moore, the consultant who completed the BE for the proposed Elsmere landfill site.

Five (5) Biological Evaluations (BE) were written for sensitive plants in FY 93. Two of these were contracted with outside consultants selected by the Forest and paid for by the proponent of the project. These included the Karatka Ridge Snow Making Project encompassing approximately 10 acres and the proposed Elsmere Land Exchange which encompasses approximately 1,643 acres. Biological Evaluations were completed in-house for the Mt. Baldy Land Exchange (733 acres), Kratka Ridge Ski Area Improvement project (30 acres), and Arroyo OHV Trail Project which totaled approximately 48 acres.

Total acres inventoried by Forest personnel and contract biologists during FY 93 equals approximately 8,226 acres.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

No new species management guides were completed in FY 93.

Rancho Santa Ana Botanic Garden revised the Forest atlas for sensitive plants. This revision was based on inventory data collected over the past 7 years by the Gardens and Forest personnel.

See item 2 above for project related accomplishments.

4. **$$ spent on the plant program during FY 93 by the following funding sources:**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | *$ 40,000* |
| Contributed funds & cost-share from non-Forest Service sources | *$105,000* |
| **Total Forest Plant Program** | *$145,000* |

5. **Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

One new population of *Calystegia peirsonii* consisting of approximately 35 individuals was discovered on the Tujunga Ranger District.

6. **Other Forest plant program highlights.**

None.

CLEVELAND NF **********

**1. Describe the botanical expertise and workforce on your forest**

Deveree Volgarino continues as a Biological Technician on the Descanso District. Kirsten Winter continues as the Forest Botanist/Acting Wildlife Biologist. Tess Higgins is the Botanical Assistant. On the Trabuco District, Mary Thomas (District Biologist) is the Sensitive Plant Coordinator. Leigh Sevy (Range Conservationist) is the Sensitive Plant Coordinator for the Palomar District.

Volunteers contributed many hours. The Laguna Mountain Volunteer Association spent about 300 hours on restoration projects and nursery work. Milton Gregory contributed over 1600 hours of time assisting the Descanso District with the native plant nursery, site-specific seed collections, sensitive plant surveys, and sensitive plant habitat improvement projects.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Forty biological evaluations covering approximately 5000 acres were written in FY 93. These included evaluations of one land exchange, several grazing allotments, special use permits, habitat improvement projects, recreation developments, and prescribed burns.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

Vail Lake Ceanothus (*Ceanothus ophiochilus*) - Dev Volgarino and Kirsten Winter located two new populations (over 5000 individuals) of Vail Lake Ceanothus in the Agua Tibia Wilderness. This species was previously known only from its type location, and is currently state-listed and being considered for listing by the US Fish and Wildlife Service.

Dev and Kirsten hosted several field trips for Jim Dice, local CDFG botanist, to show him state-listed species occurring on Forest lands. We updated Jim on management concerns for these species.

Hazel Gordon, Ecologist, completed a management guide for the King Creek Research Natural Area. This guide provides management direction for the RNA and has already resulted in improved management of the area. This guide will be a model for the Cleveland as we develop plans for our other two RNA's. Hazel also presented a program on the King Creek Research Natural Area and the Cuyamaca Cypress to the local chapter of the California Native Plant Society.

Habitat management guidelines for Cuyamaca Cypress were completed. An interim management prescription for all other Forest Sensitive plant species (total of 34 spp.) was completed.

Botanical surveys were completed to clear areas for relocation of several campsites. The campsites being relocated are currently in the middle of Cuyamaca Meadowfoam populations and are adversely affecting this sensitive species.

The Descanso District developed a challenge cost-share with Jeri Hirschberg to complete botanical survey work. Jeri's excellent work resulted in the discovery of several new sensitive plant populations, including new populations of the elusive San Bernardino Bluegrass (*Poa atropurpurea*), a species likely to be proposed for federal listing in the near future. Jeri contributed $2500 of her time to assist the Forest with surveys.

The Forest Botanist developed a cost-share with the California Dept of Fish and Game and the Nature Conservancy to provide funding for a fence to protect San Diego Thornmint (*Acanthomintha ilicifolia*) from unauthorized grazing. $4,000 was provided to assist the Forest with completion of this project in 1994. Dev Volgarino, District Botanist, is planning and implementing this project.

For Wildflower Week, District Botanist, Dev Volgarino, and volunteer botanist, Milton Gregory, organized and led a California Native Plant Society trip on the Cleveland National Forest. The field trip emphasized pinyon pines and their habitat.

**4. $$ spent on TES plant program during FY 92 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *35,000* |
| Contributed funds & cost-share from non-Forest Service sources | $ *15,000* |
| **Total Forest Plant Program** | $ *50,000* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 92**

| *PLANT SPECIES* | *# NEW SITES* |
|---|---|
| *Astragalus deanei* | 2 |
| *Astragalus douglasii* v. *perstrictus* | 1 |
| *Berberis nevinii* | 1 |
| *Ceanothus cyaneus* | 2 |
| *Ceanthous ophiochilus* | 2 |
| *Dodecahema leptoceras* | 2 |
| *Dudleya multicaulis* | 3 |
| *Dudleya viscida* | 13 |
| *Horkelia truncata* | 5 |
| *Lepechinia cardiophylla* | 5 |
| *Linanthus orcuttii* | 1 |
| *Monardella hypoleuca lanata* | 1 |
| *Poa atropurpurea* | 1 |
| *Ribes canthariforme* | 1 |
| *Satureja chandleri* | 2 |
| *Senecio ganderi* | 1 |
| *Streptanthus bernardinus* | 1 |

42 new sensitive plant locations, representing 16 Forest Sensitive species, were discovered in FY 93. These included the first occurrences of *Astragalus deanei*, *Dudleya multicaulis*, *Mahonia nevinii*, and *Streptanthus bernardinus* located on the forest!

**6. Other Forest plant program highlights**

DISTRICT BOTANIST, DESCANSO RD

Deveree Volgarino continued to manage and administer a native plant nursery at Cameron Fire Station. This year, she scheduled one Saturday a month for volunteers to work at the nursery, learn about native plants, and perform restoration projects on the district. Fifty native plant species are now grown at the nursery, all from site-specific locally collected seed. Five other volunteers grow stock for the Forest. Dev and the volunteers planted over 1400 oaks on the Forest this winter and worked on restoring other lands with native plants.

Dev and volunteer Milton Gregory planted 50 acres with pine trees to accomplish District reforestation goals.

Improved habitat for San Diego Thornmint and 2 other sensitive plants by removing 400 cubic yards of illegally dumped roofing materials and drums of hazardous materials from several sites. Fencing and signing was installed to prohibit illegal shooting, dumping and OHV use.

Deveree and Russ Lajoie, range conservationist completed a major watershed improvement project in Laguna Meadow, organizing and implementing a gully repair project. This project included resloping the sides of the gully, stablizing with erosion cloth and native plants and 1/2 mile of cattle exclusion fencing. Dev continued revegetation work on a road rehab in Laguna Meadow, where native plants have been used with great success to reclaim the road. A large WIN inventory was performed this year on the Descanso District. Previous watershed improvments were monitored this year and wet meadow and stream erosion occurring from the 1993 winter storms were mapped.

Wrote sensitive plant species accounts and project plans for the 5-year planning effort, and represented the Forest botany program at several meetings on budgets and Forest organization.

Dev and Milton Gregory participated in providing native seed for a genetic study in Region 6 and are working with PSW and local Indian Reservations to reestablish native plants on reservations. Volunteer work on watershed restoration is also ongoing with local reservations.

Dev provided materials for, and assisted with construction of an authentic replica of a Native American house on Laguna Mountain. Under the guidance of Trinidad Ochurte, a member of the Kiliwa Indian Community of Arroyo Leon, Baja California, the house model was constructed in the traditional style. The Kiliwa live the old ways, and have the knowledge to teach the traditional ways to the local Native Americans who live a more modern existence. Thirty children from local reservations joined in on the house construction. Trinidad demonstrated how to process Yucca leaves so they could be used for rope. Next, he demonstrated the construction of digging sticks. Everyone joined in digging 8 holes, using digging sticks, for the frame support. Willow branches were then bent into a dome shape, tied together with the Yucca rope and the ends were buried in the holes. Willow branches and poles were added to complete the house.

SENSITIVE PLANT COORDINATOR, PALOMAR RANGER DISTRICT

Leigh Sevy developed and implemented a gully repair project for Mendenhall Valley. This will improve habitat for Cuyamaca Meadowfoam, a Forest Sensitive species that occurs in the adjacent meadow.

Leigh coordinated Forest input on a power line project that affected a federally-listed plant. She arranged a field trip for US Fish and Wildlife botanists, assisted with development of suitable mitigation, and prepared the biological assessment of the project.

FOREST BOTANIST

Kirsten Winter provided extensive comments to FWS on information requests on eight sensitive plant species being reviewed for possible listing.

Hosted a meeting discussing the status of Munz's Onion and San Diego Thornmint. Orlando Mistretta of Rancho Santa Ana Botanic Garden organized the meeting, which was attended by consultants, professors, CDFG representatives, and local experts.

Hosted two field trips for Regional Botanists as part of the National TES Program Managers meeting. We visited McGinty Mountain, a Nature Conservancy reserve with an abundance of rare plant species; the new Vail Lake Ceanothus locations, and the Santa Rosa Plateau, a TNC reserve with fantastic vernal pools!

Updated the Forest sensitive plant database so that it could be related to forest vegetation DTB and wildlife DTB. Developed a plant list for the entire Forest. Entered local (project-related) plant lists into the database to improve the quality of the vegetation DTB.

Presented a program on Cleveland NF sensitive plants and their management for the local CNPS chapter. Attended California Native Plant Society board meetings, chapter meetings, and field trips. Served as field trip chair for the local CNPS chapter. Presented a slide show on the Forest Botany program to the Lake Hodges Native Plant Club.

Coordinated and finalized the 5-year planning document for the Botany, Wildlife, TES, and Fisheries program for the Forest.

Prepared a detailed habitat description for the Federally-listed Threatened California Gnatcatcher. Prepared an analysis of the response of coastal sage scrub vegetation to fire as part of the rehabilitation report on the 4000 acre Eagle Fire.

Coordinated and implemented the Forest Stream Survey effort; the Cleveland NF was a pilot forest for testing the new stream survey protocol.

Tess Higgins, Botanical Assistant, provided invaluable assistance with distributing information to districts and providing information to the public. Tess attended the Botanist's workshop in February 1993 representing the Cleveland.

## ELDORADO NF **********

**1. Describe the botanical expertise and workforce on your forest**

The forest botany program continues to be managed by Mike Foster, Forest Botanist. Assisting Mr. Foster are two NTE botanists, Patti Lesky and Sue Britting. Mark Williams, assistant culturist on Georgetown RD, continues to perform duties of district botanist and sensitive plant coordinator. Three other districts have sensitive plant coordinators: a forester, Tina Minter, Amador RD; and two wildlife biologists: Don Yasuda, Pacific RD; and Susan Yasuda, Placerville RD. Six temporary botanists were hired on these three districts in support of their programs: Dan Burmester, Amador RD; Robin Barron and Holly Stewart, Pacific RD; and Thea Hangaard (acting as District Botanist), Jeff Waller, and Gabriella Indindoli, Placerville RD.

Six volunteers contributed 52 days of volunteer botanical work on the Pacific RD.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

| *Type of project* | *Acres surveyed* | *No. of BE's completed* |
|---|---|---|
| 22 Green Sales | 5,280 | 12 |
| 7 Salvage Sales | 4,600 | 13 |
| Vegetation Mngt. (herbicides) | 490 | 1 |
| 46 Recreation/Facilities Prescribed Burns/Misc. | 1,250 | 60 |
| Cleveland Fire Recovery EIS | 4,190 | 1 |
| TOTALS | 15,810 | 87 |

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

A. *Wildflower Week*

The Forest Botanist led a field trip to the Cleveland Burn to view fire effects on *Calochortus clavatus* var. *avius* and presented a wildflower slide show at a campfire talk at Wrights Lake campground.

One wildflower walk was conducted by the Assistant Forest Botanist and four were conducted by the Pacific RD Botanist to various areas within the forest. These hikes highlighted sensitive plants, high alpine meadows, bogs, and vernal pools.

The Placerville RD presented a wildflower/sensitive plant exhibit for the district open house which included a wildflower identification contest, photo and live material displays, and handouts on the uses of native plants by local Native Americans and for landscaping. In addition, two 20 minute slide shows on the Cleveland Burn, subsequent wildflower regrowth, and unique habitat areas within the district were presented. Over 120 visitors viewed the display.

B. *Challenge Cost Share*

The Georgetown RD continued demographic monitoring of *Senecio layneae* within the Traverse Creek Botanical Special Interest Area with the help of volunteers from the Divide Garden Club.

C. *Information Management*

Completed data entry for five forest sensitive species into an Oracle database system. This data has been retrieved as an aid in conducting project level analyses of effects.

Updated forest plant list to reflect scientific name changes in Jepson Manual and entered list into ORACLE data base. Added 80 new species to list and created bibliography for adding sources of plant lists to data base.

D. *Education/Interpretation*

The Forest Botanist provided two training sessions on identification of Sierran trees and shrubs to members of PNW's Forest Health Monitoring program and PNW's Forest Inventory and Analysis program. This included preparation of tree and shrub keys, lectures, and and field trips.

The Forest Botanist wrote 3 articles on the Forest Sensitive Plant Program for *The Interpreter*, a newsletter for the Eldorado National Forest Interpretive Association, and one article for R5 BOTNEWS on willow planting specifications. The Assistant Forest Botanist wrote 3 articles for R5 BOTNEWS.

The Forest Botanist provided liner notes on botanical resources for use in two brochures on The Rock Creek Off Highway Vehicle Use Area and Middle and South Forks of the American River.

Pacific RD Botanists assisted in plant identification for Oak Ridge High School volunteers conducting ecology studies in the Cleveland Burn.

Don Smith, charter member of CNPS and returning volunteer extraordinaire, compiled a document entitled *Ethnobotany of Eldorado National Forest Plants*. This ethnobotany described the native uses of over 260 plant species found on the Eldorado National Forest.

District botanists participated in the development of the Wrights Lake Interpretive site, which included herbarium collections, plant identification, trail and meadow revegetation, and preparation of plant information for Wrights Lake Homeowners Association brochure. The District Archaeologists (J. Walter, K. Bennet, and K. Deal) used this assistance to prepare a publication entitled *Native American and Pioneer Uses of the Plants in the Wrights Lake Area*. This two volume set included photocopies of 130 pressed plant specimens.

E. *Native Grasses*

The Placerville RD hosted a native grass field day attended by botanists, wildlife biologists, and range conservationists. Training on grass and sedge identification and restoration/revegetation techniques was provided by Steve Dowty. Mr. Dowty is a local graminoid expert and frequent volunteer.

Local native grass collection sites were identified and mapped for present and future collection purposes within the forest. Grass collections were completed for use in rehabilitation projects, erosion control, genetics research, and common garden studies.

F. *Riparian*

The Forest Botanist developed and entered into an agreement with the California Conservation Corps to collect, propagate, and provide native plants for Echo Summit Riparian Initiative project.

The Forest Botanist developed a wetland species list and criteria for its use as an aid in the delineation of Stream Classes. Forest and District botanists used the list and associated criteria to assist in the delineation of Stream Classes in the Cleveland Burn.

G. *Cleveland Burn*

With the assistance of detailed botanists from the Plumas National Forest, extensive surveys and plant inventories were conducted in the Cleveland Burn area providing current data on the status of sensitive plant habitat within 5,000 acres of ENF lands. Implementation monitoring during salvage logging operations was developed and implemented on 37 sites (EIS required presence of botanists during logging operations within sensitive plant occurrences).

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | *$171,900* |
| Contributed funds & cost-share from non-Forest Service sources | *$ 350* |
| **Total Forest Plant Program** | *$172,250* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| Species | No of New Occurrences | No. of Extensions |
|---|---|---|
| *Calochortus clavatus* var. *avius* | 20 | 6 |
| *Navarretia prolifera* ssp. *lutea* | 3 | 1 |
| *Phacelia stebbinsii* | 2 | |
| *Silene invisa* | 3 | 6 |
| Totals | 28 | 13 |

**6. Other Forest plant program highlights**

*Amador Ranger District Highlights*

District botanist conducted botanical inventories and prepared plant lists for two watersheds.

*Georgetown Ranger District Highlights*

Mark Williams began implementation of interpretive services program for the Traverse Creek Botanical SIA with the aid of a district NTE and 30 volunteer person hours.

*Pacific Ranger District Highlights*

District botanists prepared maps on the distribution of *Viola tomentosa* to facilitate its consideration for listing as a R5 sensitive plant species.

A plan for monitoring the effects of herbicides on *Calochortus clavatus* var. *avius* was designed and implemented.

*Placerville Ranger District Highlights*

District Botanist coordinated with Landscape Archictect to incorporate the use of native grasses in portions of new office landscaping design. The District native plant garden was modified to include native grasses and locally collected wildflowers.

Conducted ozone monitoring (scoring).

*Supervisors Office Highlights*

The Forest Botanist was detailed for 3 months as a wildlife biologist and served as a core team member of the forest timber sale reconsideration team, providing input on sensitive plant species, MIS species, and sensitive wildlife species exclusive of spotted owl.

The Forest Botanist participated in development of Action Plan to implement Region 5's Stategic Plan for Genetic Resources.

**INYO NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Inyo National Forest had one GS-9 (50%) Botanist during 1993. This person was on detail to the Chugach National Forest from 6/11/93 through 9/30/93. Both the north zone and south zone had wildlife biologists who were responsible for the wildlife and botany programs on their respective zone (No. Zone = 25% of wildlife biologists time). The north zone employed a seasonal Bio-Tech for an extended season who worked primarily in the area of botany. Two other Bio-Techs from the north zone spent approximately half of their time on plant survey work. In addition, the SO supported two student aids (supplied by PSW) who worked exclusively on botanical work. Twelve volunteers from the Northern Nevada Native Plant Society helped with survey work on *Astragalus kentrophyta elatus* in the White Mountains - South Zone (98 hours of time). Walter Kelly, a volunteer, spent five days studying *Cryptantha roosiorum* pollinators. A graduate student completed an extensive field survey of *Polemonium chartaceum*.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

**SUPPORT WORK:**

North Zone:

Completed 22 BE's

Coordination of botanical review of Consultant and Cooperative projects:

Sherwin Ski Area, Dechambeau Ponds Wildlife Project, Lorenzo Riparian Rehabilitation Project.

**PERMITS ISSUED:**

At least six forest wide permits were issued for major herbarium collections. In addition, several local permits were issued for special research projects.

**MONITORING:**

North Zone:

| | | |
|---|---|---|
| *Astragalus monoensis* | | 300 acres |

South Zone:

| | | |
|---|---|---|
| *Abronia alpina* | Ramshaw | 40 ac. |
| *Hackelia brevicula* | Whites | 15 ac. |
| *Oxytropis delexa sericea* | Whites | 15 ac. |

**STRUCTURE MAINTENANCE:**

| | | |
|---|---|---|
| North Zone: | 2 structures | 2 ac. |
| South Zone: | 6 structures | 3 ac. |

**SURVEYS**

North Zone:

Eleven projects and three timber compartments surveyed for a total of 9,092 acres.

South Zone:

Ten plant suveys were conducted for a total of 5,145 acres.

3. **Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

**Management Guides:**

Eighteen new interim management guides were written and are ready for the Forest Supervisors signature.

**Wildflower Week:**

The Forest participated in Wildflower Week by issuing press releases and putting up Celebrating Wildflowers posters in every office. In addition the Mono Lake, Mammoth, and White Mountain RD's conducted special wildflower walks (these were not during the designated week since here on the east side we had to wait for the flowers to come out).

**Sensitive Plant Management:**

The forest Botanist took a proactive approach to protection of *Astragalus kentrophyta elatus* in the area where a new interpretive center is being designed. The walkways and public traffic corridors are being designed around the population at Schulman Grove. The field work on *Arabis pinzliae*, *Phacelia monoensis*, and *Streptanthus oliganthus* was completed this summer (Challenge Cost Share with Nevada Natural Heritage Program. Final report not due until 12/31/93).

4. **$$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *44,690* |
| Contributed funds & cost-share from non-Forest Service sources | $ *705* |
| **Total Forest Plant Program** | $ *45,395* |

5. **Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| Name | # New Occurrences |
|---|---|
| *Phacelia monoensis* | 4 |
| *Polemonium chartaceum* | 4 |
| *Arabis pinzliae* | 3 |
| *Draba subumbellata* * | 2 |
| *Draba californica* * | 1 |

* = Watch List Species

6. **Other Forest plant program highlights**

The Forest Botanist established a program for using local species during rehabilitation efforts in the Eastern Sierra Region. A part of this involved the development of a list of species, by zone, for all of the lands adjacent the Inyo National Forest. To gain support for this effort, the Forest Botanist worked with all of the agencies and municipalities within the area and reestablished the interagency botanical group as a part of

the Interagency Committee. Seed sources for this program will be identified during FY 1994. The Forest Botanist is now the leader for this group.

The Forest Botanist made arrangements for Walter Kelly (a volunteer) to complete a study on pollinators of *Cryptantha roosiorum*.

The field guide of sensitive plants on the Inyo National Forest was 75% complete by the end of FY 1993. It should be in place and operable for the 1994 field season. It is designed so that individual pages may be duplicated and distributed to field going people in an attempt to locate new populations of sensitive and watch list species.

During the 1993 field season, a research scientist from PSW spent many days reviewing the botanical composition of three Research Natural Areas. In addition, a group of researchers from PSW, UC Santa Barbara, SNARL, and Calif. Dept: of Fish & Game worked on measuring grazing impacts in Ramshaw Meadows on the Kern Plateau.

KLAMATH NF **********

1. **Describe the botanical expertise and workforce on your forest**

| | |
|---|---|
| Forest Botanist | GS-11, PFT, Program Manager; Botany, RNAs, SIAs |
| Asst Forest Botanist | GS-9, 18/8, Botanical Surveys, Sensitive Plants |
| Forestry technician | GS-5, Sensitive plant survey trainee, occasional |
| Archaeology tech. | GS-5, Sensitive plant survey trainee, occasional |
| Botanist/Ecologist | GS-9, PFT, Ecosystem Classification team leader |
| Botanist | GS-9, 13/13, Ecosystem Classification |
| Botanist | GS-7, temp., Ecosystem Classification |

2. **Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

2 green timber sales
1 green timber sale/underburn EA
1 insect salvage sale
2 sanitation/salvage timber sales
7 roadside hazard timber sales
2 underburn EA's
10 miscellaneous salvage sales
1 helicopter landing construction
4 wilderness trail construction
1 mining proposal
1 facilities removal project
2 land exchanges
1 campsite development
eco-classification plots/mapping

* Total acres surveyed for sensitive plant species: 3,500
* Project acres evaluated for potential sensitive habitat: 10,650
* Number Biological Evaluations written for sensitive plants: 26

* 20,000 acres mapped through ecology program to be used in prediction of potential Sensitive plant habitat:

3. **Describe your forest accomplishments in sensitive plant management in FY 93. (Partnerships highlighted):**

* Wrote standards and guidelines for Sensitive plant management in Draft Land Management Plan. Incorporated Species Management Guides.

NATIONAL "CELEBRATING WILDFLOWERS" THEME

* Presented a wildflower slide show for the local Audubon Society chapter.

* Led a field trip to the proposed China Mountain Botanical Special Interest Area, co-sponsored by the **National Audubon Society**.

* Klamath NF "Celebrating Wildflowers" T-Shirts were produced featuring local endemic *Phlox hirsuta*, Yreka phlox.

PARTNERSHIPS:

* Exchange of knowledge and information with **California Native Plant Society** and **California Natural Diversity Data Base**.

* Assisted a **California State University, Chico** botany graduate student in obtaining specimens of *Vaccinium coccinium* for DNA study.

* Provide management information on Sensitive plant species to **Registered Professional Foresters** and private land owners.

* Joint management and habitat enhancement work for *Phacelia cookei* with **Shasta-Trinity National Forests**.

* Joint status review of *Pedicularis howellii* on the Siskiyou crest with **Siskiyou National Forest**. Contributed to development of a Siskiyou Mountains rare plant poster.

4. **$$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *126,000* |
| Contributed cost-share value, non-Forest Service; RNA program | $ *10,000* |
| Botanists funded through ecology Program | $ *75,000* |
| **Total Forest Plant Program** | $ *211,000* |

5. **Name of sensitive plants and number of new occurrences discovered in FY 93**

| | |
|---|---|
| *Eriogonum hirtellum* | 5 (Significant range extension) |
| *Galium serpenticum* ssp. *scotticum* | 1 |
| *Lewisia cotyledon* var. *howellii* | 3 |
| *Pedicularis howellii* | 1 |
| *Perideridia leptocarpa* | 1 |
| *Trillium ovatum* ssp *oettingeri* | 2 |

6. **Other Forest plant program highlights (Partnerships highlighted):**

BOTANICAL SPECIAL INTEREST AREAS

* Developed signs and interpretive flyer for nature trail at Kangaroo Lake proposed Botanical SIA.

* Developed species list for Pluto Caves potential SIA.

* Developed preliminary brochure for botanical interests on the Klamath NF.

* Joint addressing of grazing impacts to Siskiyou Crest plant communities and Botanical SIAs with **Rogue River National Forest**.

RESEARCH NATURAL AREAS

* Inventoried and mapped vegetation in proposed French Creek RNA.

* Established a cost-share agreement with **Klamath Mountains Conservation Task Force** to continue mapping and inventory cave resources within the proposed Marble Caves and French Creek RNAs.

* Obtained biological specimens collected from the Marble Caves in 1979 from **University of Pacific** and verified identity with **California Academy of Sciences** as species now extirpated from the area. Obtained display case donation from **Siskiyou County Museum** for specimen display.

AIR QUALITY

* Continued establishing plots and monitoring lichens for potential changes in air quality for the fourth year.

* A literature review was made to investigate the potential for air quality monitoring on the Klamath using vascular plants.

* Seeds were collected from KNF habitats to begin testing for response toair quality changes as part of a regional partnership with **air quality researchers.**

SPECIAL FOREST PRODUCTS

* Established plots in multiple vegetation types as part of **PNW** study of the ecological effects of tan oak mushroom harvest.

NATIVE PLANT PROPAGATION

* Seeds were collected from 5 species of native bunch grass as part of the partnership with the **Redwood City Seed Company** and **Mendocino NF** to investigate species potential for revegetation efforts.

OTHER

* Led field trip through the Kangaroo Lake Botanical Special Interest Area and developed botany program display during a visit of the **Mexican Department of Natural Resources** for signing of international USFS/SAHR MOU.

* Maps of Sensitive plant management areas, Botanical Special Interest Areas, and Research Natural Areas are now included in the Klamath's Geographic Information System.

* Collected pollen samples for analysis by a **University of Pennsylvania** paleobotanist studying the pre-historic range of a number of KNF species.

* Developed a list of native species occurring within, and suitable for restoration efforts along Yreka Creek for the **Yreka Greenway Committee**. Assisted with developing text and photos for interpretive murals and signs for the multi-agency project.

* Participated as resource specialists leading nature hikes during the spring and fall for students at **Kidder Creek Outdoor School**.

* Participated in the "Women in Science" week at the **Girl Scouts** day camp. Discussed a botanist's job and instructed the girls in how to do a biological survey of the camp area.

* Served as a judge for **Grenada Elementary School's** science fair.

* Coordinated and taught at a 1/2 day fire ecology class as part of the annual Klamath NF **Fire Captain's Workshop**.

* Zone botanist serves as Forest Recycling Program manager.

* Forest botanist is a member Klamath NF Emergency Fire Rehabilitation team.

## LAKE TAHOE BASIN MANAGEMENT UNIT **********

**1. Describe the botanical expertise and workforce on your forest**

Botanical expertise is provided by the biologists in the wildlife department at the LTBMU. We have two permanent and two temporary biologists, all of which have had botanical college courses and field experience with plants. These biologists conduct inventories, write biological evaluations and provide botanical input to enviromental documents.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Sensitive plant surveys and biological evaluations were completed by the unit biologists for 12 projects. A total of 48 acres were surveyed pior to the implementation of 3 land exchanges, 2 engineering projects, 1 bike trail, 1 interpretive facility and 5 timber salvage sales.

Six additional projects were surveyed and biological evaluations were written by private consultants at the expense of the project proponents. Heavenly Ski Area surveyed approximately 50 acres and discovered a new population of *Draba asterophora asterophora*. Surveys and BE's were also completed for 2 Forest Service recreation developments, 1 special use permitee, 1 watershed restoration project and 1 land exchange.

Existing populations of 5 sensitive plant species were monitored over approximately 59 acres.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

The most exciting accomplishment for the LTBMU this year was the development of a TES training session. The three hour session was designed to familiarize field crews with the TES species on the unit. It included a slide show of the plants and their associated habitats and an illustrated field guide for each participant. Approximately 60 people, including outside agency employees, attended the two sessions given in May and June.

A Draft Management Plan was written for the newly designated Grass Lake Research Natural Area. Several study proposals and one special funding request have been submitted for review by PSW this year. Approval and/or funding should be secured next year.

A newly established population of Tahoe yellow cress (*Rorippa subumbellata*) was fenced off to provide protection from recreationists. Signs were posted along the fence to explain the nature of the sensitive plant and the project area.

A new sign was installed along the Tahoe Rim Trail to protect an existing population of *Draba asterophora* var. *asterophora*. The sign was also designed to educate the public by stressing the importance of staying on the trail.

An interim management guide for *Eriogonum umbellatum* var. *torreyanum* was drafted in a cooperative effort by the Tahoe National Forest.

A population of *Silene invisa* was flagged for protection in an Integrated Resource Management project that was scheduled for implementation this year.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | | |
|---|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | | $ *11,355* |
| Support surveys | $1,280 | |
| Monitoring | $1,340 | |
| Unit training session | $1,585 | |
| Seed collection | $1,410 | |
| ROSU fencing and signs | $ 890 | |
| Grass Lake RNA Draft Mgmt Plan | $4,000 | |
| Travel/Training | $ 850 | |
| Contributed funds & cost-share from non-Forest Service sources | | $ *6,000* |
| **Total Forest Plant Program** | | $ *17,355* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

Three new occurences of sensitive plants were found in the Basin. Two new *Draba asterophora* var. *asterophora* populations were discovered: one in the Trimmer Peak area and the other at Heavenly Ski Area. A new population of *Silene invisa* was located near Echo lakes.

**6. Other Forest plant program highlights**

The Intrepretive Services Staff of the LTBMU conducted bi-weekly wildflower walks for the public and produced a 75-page, color illustrated and photographed wildflower reference book for the visitor center.

The botanists provided the Cultural Resources staff with a plant inventory of a Washoe Indian site. The inventory will be used to help identify various uses of the native plants.

A large variety and quantity of native plant seeds were collected this year with the help of a 6 person Youth Conservation Corp crew, unit volunteers and the wildlife crew. Species collected include two grass species, *Stipa* and *Sitanion* (64 pounds of uncleaned seed), eight shrub species (120 pounds of uncleaned seed) and *Rorippa subumbellata* (200 seeds). These seeds are destined for many uses, including: a regional ozone study, the Redwood Seed Co trial tests, watershed restoration and wildlife habitat improvement projects, and the future establishment of a wildland nursery here at the Basin.

The LTBMU revegetation specialist continued the pine needle collection program that was started last year in cooperation with the Soil Conservation Service, Eldorado County and South Tahoe Refuse Company. Pine needles were dropped off by the public at a designated dump site and even picked up by the local refuse company this year. The needles are baled and used as mulch in revegetation projects. Sites that were mulched with pine needles last year show a noticeable increase in native plant regeneration.

In addition to pine needles, the reveg specialist is also collecting woodchips and aquatic weeds for use on local revegetation projects. The nitrogen rich materials should provide nutrients and a water retentive mulch that will be ready for use next spring and summer.

## LASSEN NF **********

**1. Describe the botanical expertise and workforce on your forest**

Botany personnel on the Lassen National Forest for FY 93 are the forest botanist (Beth Corbin), one NTE botany seasonal (Kim Earll), and three district sensitive plant coordinators with collateral duties (Chuck Rowe, Dan Merritt, and Wayne Bienkowski).

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Thirty-six projects were surveyed for sensitive plants in the 1993 field season. These projects included fuelbreaks, an OHV trail reroute, water developments, stream restoration, salvage and green timber sales, and grazing allotments. Total acres surveyed were 278,825 acres and took 82 person-days to complete. Sensitive plants were found in six of these project areas. Environmental analysis information (including biological evaluations) has been or will be supplied to project planners. Input was also provided for several other projects without new field surveys being done, based on previous surveys or existing habitat information.

*Salvage sales*

Sixteen salvage sales were surveyed for a total of 79,700 acres. Task took 41 person-days to accomplish.

*Green Sales*

Four sales were surveyed covering 21,200 acres.

*Fuelbreaks*

Four fuelbreaks were surveyed covering 100 acres.

*Watershed Projects*

Four watershed projects were surveyed covering 101,090 acres.

*Allotments*

Three allotments were surveyed covering 62,600 acres.

*Other*

Five other projects such as road widening, off-highway vehicle reroute, etc. were surveyed covering 6,535 acres.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)**

A draft species management guide/conservation strategy was developed for *Gratiola heterosepala*, in cooperation with the Susanville District BLM botanist.

An article about the sensitive plant *Scheuchzeria palustris* var. *americana* was published in *Fremontia*, journal of the California Native Plant Society.

Botanical information sessions were held in conjunction with wildflower week activities on the Eagle Lake and Almanor Ranger Districts. They were well attended and well received.

Wildflower week displays at the SO and Ranger District lobbies featured photographs, fresh floral displays, and wildflower hotspot publication handouts.

A brochure on the Willow Lake botanical special interest area was developed with volunteer help from artist Joy Meagher and retired professor Vernon Oswald, and is hot off the presses.

Boundary signs for Research Natural Areas, with generic interpretive and protection information, were developed and manufactured, partially with funds from the California Environmental License Plate (CELP) program.

An interpretive sign for botanical and other values is being developed and a rail fence rebuilt at Big Springs on the Almanor Ranger District in a volunteer agreement with the Chester Audubon Society.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | | |
|---|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | | *$ 57,900* |
| | HC | $ 1,000 |
| | EL | $ 1,000 |
| | AL | $ 3,200 |
| Contributed funds & cost-share from non-Forest Service sources | | |
| CELP | | *$ 470* |
| Volunteer Labor | | *$ 1000* |
| **Total Forest Plant Program** | | *$ 64,570* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| District: | HC | EL | AL |
|---|---|---|---|
| *Eryngium mathiasiae* | 2 | | |
| *Lupinus dalesiae* | | | 1 |
| *Mimulus pygmaeus* | 3 | several occurrence extensions | |
| *Orcuttia tenuis* | 2 (1 on pvt) | | |
| *Polygonum polygaloides* ssp *esotericum* | 1 | 1 New species for the Forest | |

In addition, several new occurrence of special interest species were discovered.

**6. Other Forest plant program highlights**

The following known sensitive plant occurrences were monitored in FY 93:

*Arabis constancei*-1
*Collomia larsenii*-1
*Gratiola heterosepala*-5
*Orcuttia tenuis*-7
*Calochortus longibarbatus*-1
*Eryngium mathiasiae*-9
*Mimulus pygmaeus*-12
*Penstemon personatus*-2

*Scheuchzeria palustris americana*-2
*Senecio eurycephalus lewisrosei*-1
*Trillium ovatum oettingeri*-2
*Sedum albomarginatum*-1
*Silene invisa*-3

Botany personnel continue to coordinate with other resources to increase the use of locally collected native plants for revegetation and meet with other agencies and cooperators to develop propagation resources. We also collected native seeds of several species (mostly grasses) for testing and revegetation.

Lichen monitoring as an indicator of air quality continued in the Thousand Lakes and Caribou Wilderness Areas in FY 93.

The Forest Botanist continued assisting with Land Management Planning, by helping to finalize the Forest LRMP (signed January 1993) and responding to appeal issues.

The Forest Botanist serves as the Forest contact for the ecology program, and attended meetings and shared information with the Forest on ecosystem classification and Research Natural Area developments.

Interpretive activities (in addition to Wildflower Week) included campfire slide show programs and community presentations (ex: girl scouts, high school, Audubon Society, and garden club).

The program implementation document for the Forest biological resources program ("5 year plan") was finalized, including an extensive section on the Forest's botany program.

Additions were made to the Forest sensitive plant and wildflower slide collections, and additional collections were made for the Forest herbarium.

A partnership with the Susanville District of the BLM continues, as BLM and Forest Service botanists jointly monitored sensitive and special interest plant species, worked on wildflower week and native plant revegetation activities, and continue to share information about the local flora.

Forest botanical personnel continue to provide information to the public and researchers on plant species of the Forest.

The Forest Botanist worked with district personnel and the counties in noxious weed identification and eradication.

The Forest Botanist continues to coordinate with other Forest Botanists and other interested parties to share information on shared rare species and on program management (ex: NBOT meetings).

**LOS PADRES NF** **********

**1. Describe the botanical expertise and workforce on your forest**

Forest Botanist Karen Danielsen and Forest Ecologist Mark Borchert continue to administer the botany program on the forest. District Sensitive Plant Coordinators (with collateral duties):

Terry Austin (Ojai RD)
Ann Marx (Santa Barbara RD)
Lisa Walsh (Mt. Pinos RD)
Kevin Cooper (Santa Lucia RD)
Christine Keil (Monterey RD)

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Number of biological evaluations: 31

| PROJECT TYPE | # OF SURVEYS | ACRES SURVEYED |
|---|---|---|
| Special use permits | 5 | 35 |
| Prescribed burns | 1 | 10 |
| Habitat improvements | 3 | 250 |
| Trails and roads | 20 | 40 |
| Mining | 2 | 60 |
| Grazing allotments | 1 | 100 |

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

INVENTORIES:

The Forest developed a challenge cost-share with The Nature Conservancy and the California Department of Fish and Game to survey potential habitat of *Caulanthus californicus*. The survey crew located new populations of *Eriastrum hooveri*, but no *Caulanthus californicus*.

The Forest submitted a proposal and received funding from the Albany PSW Research Station to survey historical populations and potential habitat of *Sidalcea hickmanii* ssp. *parishii*. The survey crew relocated all but one of the historical populations and discovered a new population.

Members of the California Native Plant Society (from the Channel Islands, San Luis Obispo, and Monterey Chapters) and other local botanists worked with the Forest Botanist to search for new populations of *Eriophyllum lanatum* var. *hallii*, *Orobanche valida* ssp. *valida*, and *Pentachaeta exilis* ssp. *aeolica*.

The Santa Barbara Botanic Garden continued floristic surveys at three Botanical Areas and at an additional site supporting sensitive meadow habitat. These surveys have resulted in new range extensions for a number plant taxa.

MONITORING:

The Forest continued monitoring *Chlorogalum purpureum* var. *reductum*. Individuals plants are marked and followed through time. Data collected annually includes number of leaves and flowers. Additional qualitative information is recorded.

Members of the California Native Plant Society (CNPS) helped the Forest Botanist relocate historical populations of *Calochortus obispoensis*, *Carex obispoensis*, *Caulanthus amplexicaulis*, *Chorizanthe breweri*, *Chorizanthe rectispina*, *Fritillaria ojaiensis*, *Pedicularis dudleyi*, and *Sidalcea hickmanii* ssp. *anomala*.

Graduate students conducted research on the Forest. A student from U.C. Davis studied the reproductive biology of *Acanthomintha obovata* ssp. *cordata*. Another student from U.C. Santa Barbara studied the reproductive biology of *Clarkia unguiculata*.

SENSITIVE PLANT MANAGEMENT GUIDES:

The Forest Botanist completed an information notebook for all the Forest sensitive plant taxa. This notebook is used by District Sensitive Plant Coordinators and other Forest personnel. A management guide has been initiated for *Chlorogalum purpureum* var. *reductum*.

WILDFLOWER WEEK CELEBRATIONS:

The Forest Botanist gave slide presentations and led field trips for CNPS and the Los Padres Interpretive Association (LPIA). The Forest applied for and received funds from the LPIA to develop an interpretive sign for the Cuesta Ridge Botanical Area. The Santa Lucia Ranger District showcased native plants found on the Forest as part of their display booth for the County Fair. Las Pilitas Nursery lent potted native plants for their booth.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *63,600* |
| Contributed funds & cost-share from non-Forest Service sources | $ *4,600* |
| Volunteer value (650 hours) | $ *6,500* |
| **Total Forest Plant Program** | $ *74,700* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| SPECIES | OCCURRENCES |
|---|---|
| *Eriastrum hooveri* | 6 |
| *Eriophyllum lanatum* var. *hallii* | 1 |
| *Orobanche valida* ssp. *valida* | 6 |
| *Pentachaeta exilis* ssp. *aeolica* | 1 |
| *Sidalcea hickmanii* ssp. *parishii* | 1 |

**6. Other Forest plant program highlights**

Planned and implemented revegetation projects using native seed collected on site. The Elkhorn Ranch Nursery and the Tree of Life Nursery have been extremely valuable partners in this endeavor.

Coordinated a meeting with CNPS members and PSW Research personnel to discuss the development of an eradication plan for the exotic plant *Genista monspessulana*.

Monitored postfire vegetation at the location of a 1992 wildfire.

Monitored lichens in the Ventana and San Rafael Wilderness areas for the Forest Air Quality Program.

Coordinated with the Santa Barbara Museum of Natural History to facilitate the collection of additional lichen specimens from the Forest.

Prepared botany input for Wilderness Implementation Schedules.

Issued plant and seed collecting permits.

Participated on Forest ID teams and reviewed environmental documents.

Participated on Marre Fire Rehabilitation Team (has extended into FY 94)

Assisted with vegetation sampling and data analysis at Channel Islands National Park at the request of the Park Botanist.

Attended symposia and training classes sponsored by various organizations including CNPS, the Society for Ecological Restoration, the California Native Grass Association, the California Exotic Pest Plant Council, and the Santa Barbara Museum of Natural History.

**MENDOCINO NF** **********

**1. Describe the botanical expertise and workforce on your forest**

Mike VanDame, the Forest Range Conservationist, and Marti Butow, Co-op Student Range Conservationist, worked out of the Covelo District again this year. (Marti has recently accepted a position with BLM in Alturas.) Lori Stansberry is a Range Technician on the Upper Lake Ranger District. Molly Fuller, Resource Officer on the Corning District, also is a qualified Range Conservationist. Terry Gibson, is a Forester on the Stonyford District, who has had range management experience on the Corning District and years of experience on both the Stonyford and the Corning District.

A change in occupational series (from a technician to a professional series) resulted in David Isle becoming the first official Forest Botanist for the Mendocino National Forest this year.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Over 50 Forest projects were evaluated for sensitive plant concerns in FY 93. These projects covered over 2000 acres, but actual on-the-ground surveys were not needed on more than approximately 200 acres. The projects evaluated included such diverse activities as: apiary permits; water development; rust resistant sugar pine and campground pine tree spraying (for bark insect protection); habitat improvement; communications vault; creek stabilization; fence; 6 superior tree progeny test sites; trails; sphagnum lake algae treatment; prescribed chaparral burning; timber sales; motorcycle enduro; WIN Project (for cut banks and road beds); wilderness guide permit; sprayfield; guzzler/spring development; site preparation; planting; fertilization; release; vegetation management (underburning and removal) around a lookout; a communications installation; streamside stabilization; peregrine falcon nesting site development; miscellaneous special uses; christmas tree management area; and a black oak mill study.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

The Mendocino was involved with four cooperative agreements this year.

A Participating Agreement with Niall McCarten for the creation of a Forest Sensitive Plant Handbook was initiated in September of 1992. The field work and plant descriptions have been completed. Color photos for all but one of the species have been obtained and are being mounted for the color separations. Distribution maps are being drawn. Due to difficulties in obtaining the illustrations (line drawings), this agreement has been extended until April of 1994, at which time we look forward to having a high quality, camera-ready product.

Niall McCarten's contribution to this agreement will be approximately $3,450.00, while the Forest Service contribution will total an estimated $11,405.00.

Since 1988, when Niall McCarten completed a Cost-Share Ecological Analysis and Survey for *Lewisia stebbinsii*, Niall has been doing a follow-up monitoring of six permanent transect plots that are located within four of the ten known *Lewisia stebbinsii* populations. This year Niall recruited help from the State of California, Department of Fish and Game, Natural Heritage Division (Roxanne Bittman, Heather Townsend and Tim Nosal) to spend the better part of two days in July monitoring these plots (and changing tires). Forest Service employees Marti Butow and David Isle were also able to assist with two of those plots.

A Participating Agreement with San Francisco State University and Dr. V. Thomas Parker was signed in April and will be effective through December of 1995. As a result of it, graduate student Danielle LeFer has

been putting in pre- and post-burn floristic plots and taking soil and seed samples for laboratory analysis of the seed bank potential. The overall objective is to compare the results of spring, fall and winter burning on the biodiversity of a chaparral vegetative community for two growth seasons following the burns. One helitorch and one hand burn project was accomplished in April of 1993 on the Forest. About 10 acres of that burning was in the burn study area.

Danielle has fifty flats with chaparral seedlings that have grown from the stratified soil samples she took from her spring plots. (More of them are still in stratification.) In January, she will be doing low and high intensity heat treatment of dry and moist soil samples in the laboratory to test the effects of heat treatment on the soil seed bank. Danielle's fall plots are done and waiting for the weather to "fall into prescription."

San Francisco State University's contribution to this agreement will be approximately $23,320.00, while the Forest Service and other interested cooperator's contributions total an estimated $25,284.00. In addition to the Mendocino National Forest, the other contributing cooperators in this agreement include: Colusa County Fish and Game Advisory Commission ($2,000.00); Glenn County Fish, Game and Recreation Commission ($2,002.00); California Department of Fish & Game ($1,500.00); Ukiah District, Bureau of Land Management ($500.00); USFS, Pacific Southwest Research Station ($500.00) and Mt. Lassen Chapter, California Native Plant Society ($50.00).

A Challenge Cost-Share Agreement with Craig Dremann of the Redwood City Seed Company was signed in June of 1993. It provides for the performance of seed stratification, germination and outplanting tests (for seed increase potential) on up to 200 samples of native Forest vegetation. The participant's contribution to this cost-share is approximately $10,000.00, while the value of the Forest Service contribution is approximately $3,465.00.

Approximately 120 samples from R-5 Forests have been collected for testing, and for those samples which reproduce quickly we should have preliminary seed production data by September 30, 1994. [It will be interesting to note how some of the same species (i.e. *Stipa lemmoni*, *Sitanion hystrix*, *Elymus glaucus* and *Festuca occidentalis*) that were collected from different Forests grow.] Craig has also agreed to accept some additional samples in 1994 for analysis.

In FY 93 Niall McCarten also completed a *Madia stebbinsii* Cost-Share survey that the Shasta-Trinity National Forest negotiated in FY 92, which included survey work on two Districts of the Mendocino National Forest.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *85,654* |
| Contributed funds & cost-share from non-Forest Service sources | $ *36,770* |
| **Total Forest Plant Program** | $ *122,424* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

None.

**6. Other Forest plant program highlights**

The Forest botany program this year involved many cooperative projects, and included a surprising amount of communication with personnel involved in projects with native vegetation within R-5 and R-6. David Isle was also involved with the reforestation and rust resistant sugar pine programs on the Forest.

Although some of the Forest Plant Collection Permit requests that come to the Forest generate concern about their potential impacts on the environment, those that are linked with serious study of the Forest are always encouraged and usually generate valuable information. Two of those we issued this year were good examples.

We issued a plant collection permit this year to D. Lee Taylor, a graduate student with the University of California, Berkeley. His request to do some limited root sampling of several orchid species (for small samples of root tissue that are infected with fungal symbiont) led to an interesting practical link with the use of our Ecological Unit Inventory data, because some of our EUI plot data includes the species that Mr. Taylor is studying. Using some of our plot data enabled Mr. Taylor to locate collection sites that will aid in the determination of the range of fungal species that are associated with selected orchids. The results of Mr. Taylor's study should help the Forest learn more about the interactions and ecology of our old growth forests.

Another collection permit request, with Ms. Amy Hiss (a graduate student with San Francisco State University) involves her systematic and ecological study of the *Linanthus bolanderi* complex. Although this is not the group that contains *Linanthus harknessii* ssp. *condensatus* (LIHAC), one of our sensitive plant species with taxonomic uncertainty, Amy may be in potential LIHAC habitat during her work on our Forest, and her observations could help us learn more about it.

Chico Genetic Resource Center has grown it's first 10 trays of Scarlet Bugler (*Penstemon centranthifolius*) from seed collected adjacent to the Forest from its northern-most population. More seeds were also sent this year to Dr. Andrea Wolfe, at the University of Oklahoma, for use in her continuing study of the genus. The native scarlet bugler seedlings will be used to beautify several of the Forest campgrounds as well as the entrance to Chico Genetic Resource Center.

This is the second season that Chico Genetic Resource Center has been growing the annual legume Bowl Clover (*Trifolium cyathiferum*) seedlings for an experimental Forest seed increase project. The small greenhouse flat reseeded itself and was transplanted (along with the soil inoculum) into a small outside plot for further seed increase. (More Forest collections are needed to increase its genetic base.)

Two other legumes have been sent to Craig Dremann as part of the 36 seed samples that David Isle sent under our Participating Agreement with Craig for stratification, germination and seed increase testing. They are *Lotus subpinnatus* and Small Headed Clover (*Trifolium microcephalum*.)

The Mendocino National Forest Participating Agreement with Craig Dremann is being used by 10 other R-5 Forests (with 2 others still anticipating sending in collections). To date, 120 seed samples have been submitted for testing. Under agreement with Redwood City Seed Company, Forbes Seed and Grain, Inc., is doing all the yield trials just north of Eugene, Oregon, where the climate is similar to the Northern California Forests.

Most of the seeds that have been received have been planted, so by this time next year we'll have some reports. (Craig congratulated the different Forests for the "votes" for native revegetation that they cast by taking the extra effort this field season to make these native seed collections.)

This field season, Arnold James, Mendocino National Forest Soil Scientist, and David Isle took the field plots for an Ecological Unit Inventory of approximately 10,000 acres on the Upper Lake Ranger District. (This work offered opportunities to observe which species were growing in habitats similar to those that need revegetation work, and, when seed maturity coincided with plot work, to make some native seed collections.)

In November of 1992, David Steinfeld and Colleen Archibald of Rogue River National Forest's J. Herbert Stone Nursery (in Region 6) planted six native perennial grass species from the Mendocino in their demonstration beds. They grew very well and will be evaluated for seed production in FY 94. In May, the nursery

was also able to send surplus seedlings of three of those species to Corning District for use in a revegetation project at Kingsley Glade.

According to Corning District Resource Officer Molly Fuller, the native perennial slender hairgrass seedlings (*Deschampsia elongata*) that Marilyn Loughrey planted in November 1991 as part of the revegetation projects at Rocky Cabin and 3 Prong meadow are "so thick it is really hard to tell where the plugs are any more....really successful!"

Molly Fuller and Fred Bell, Forest Landscape Architect, are in the early stages of developing a native botanical garden at the Red Bluff Diversion Dam recreation site. The long range plan is for development of several subgardens with vegetation that approximates many of the different vegetative communities adjacent to the Sacramento Valley. They have received enthusiastic responses from several educational groups that are interested in its development, and the California Native Plant Society has indicated that they would be interested in becoming involved with the project.

This season, Molly and Fred accomplished the planting of native trees (Western Sycamore, California Black Walnut, Valley Oak, Big Leaf Maple, Alder, Box Elder, Cottonwood) and Red Bud on approximately 8 acres of the Red Bluff Diversion Dam site and getting them under drip irrigation.

Upper Lake District Range Conservationist Lori Stansberry found most of the six species of native perennial bare root grass seedlings that she utilized in her November 1991 District revegetation projects grew well, but slender hairgrass was the most successful.

This year, Lori Stansberry utilized a commercial seed mix of Zorro and Molate Fescue, California Brome, Rose Clover and Cucamonga Brome at 25 pounds per acre to seed the 70 acre Modoc Ridge type conversion project. A left-over commercial seed mix (primarily native grass along with some exotic clover and blando brome) was used along banks of approximately five miles of trails.

Lori's second attempt to establish native Red Alder in outplantings around Lake Pillsbury resulted in approximately 90 percent failure. After taking the extra effort to vexar tube them for protection against deer brousing, this was a disappointing setback. (We would be interested in hearing from anyone who has successfully outplanted Red Alder seedlings.)

For other riparian restoration projects, Lori has collected Oregon Ash seed and willows that Chico Genetic Resources Center is using to grow seedlings.

This spring, Forest Hydrologist Bob Faust utilized local Forest native grass seedlings (that were grown at Chico Genetics Resource Center) to stabilize a streambank that had been impacted by grazing in the Bowery Flat area of Stonyford District. In addition to Slender Hairgrass, he utilized native Brome, Blue Bunch Wild Rye, Fescue, *Agrostis*, and Meadow Barley.

Jeff Applegate's tree tobacco eradication project on 2.3 miles of Little Stony Creek (on Stonyford District) appears to be succeeding. Only three plants were found this season.

Covelo did some native brush species seed collection this season in preparation for their 1994 harsh site revegetation projects. Their 1992 experimental harsh-site revegetation project on Buck Ridge was disappointing. The seeds that they planted under the alfalfa bales were about the only things that grew, so Mike VanDame would like to try a fall planting where straw bales are placed over the roots of native seedlings to increase the water-holding capacity, reduce frost heaving and give desiccation protection to the seedlings. Mike suspected that the alfalfa bales they used to provide the microsite enhancement (a two to three year nutrient sink that was high in nitrogen and phosphorus, provided a snow catchment, and shade) may also have provided the rodents with a home base from which to gather the seeds that they planted.

**MODOC NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Modoc hired a NTE Biologist, Allison Sanger, to take over the Sensitive Plant Program for the Forest. In addition, each district has a Sensitive Plant Coordinator who works with Allison to coordinate district botanical information. The district Sensitive Plant Coordinators are:

Warner Mountain RD: Kirsten Bordwell-Range Conservationist
Devil's Garden RD: Jim Irvin-Range Conservationist
Big Valley RD: Ken Romberger-Wildlife and Watershed
Doublehead RD: Brad Reed-Resource Officer

Other personnel who aided on various projects included George Studinski (Wildlife Biologist), Devil's Garden RD, Matt Schweich (Wildlife Biologist), Big Valley RD, Dave LeBlanc (Forestry Tech), Doublehead RD, and Mary Flores (Wildlife Biologist), Warner Mountain RD. This year we also had a Natural Resource Acadamy crew from Modoc High School which aided in surveying over 1000 acres for sensitive plants and rebuilt or repaired over 4.00 miles of fence protecting Calochortus longebarbatus var. longebarbatus populations. Sydney Smith (Zone 2 Ecologist), Laurie Johnson (CRI Botanist), and Tom Ratcliff (Forest Biologist), provided technical assistance when needed.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

| Project type: | BE's Written |
|---|---|
| 10 Salvage Sales | 10 |
| 2 Green Sale | 2 |
| 1 Powerline | 1 |
| 2 Roadside Hazard Tree Removal | 2 |
| 1 Land Exchange | 1 |
| 2 Thinning and Underburn | 2 |
| 1 Grazing Allotment | 1 |
| 1 Fence Construction | 1 |
| Total number of Biological Evaluations: | 20 |

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

Sensitive Plant Handbook was developed and distributed to district personnel.

*Rorippa columbiae*, found by the U.S. Fish and Wildlife Service in 1992 on Willow Creek was documented and mapped, and will be added to the Modoc sensitive plant list this winter.

The sensitive plant population atlas was reorganized and updated.

A Special Interest Plant List for the Forest was developed.

Met with Coordinators in Spring for consolidation of sensitive plant information and discussion of program structure and developement.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *10,000* |
| Contributed funds & cost-share from non-Forest Service sources | $ *0* |
| **Total Forest Plant Program** | $ *10,000* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| | |
|---|---|
| *Antennaria flagellaris*: | 4 |
| *Calochortus longebarbatus* var. *longebarbatus* | 43 |
| *Gratiola heterosepala* | 3 |
| *Ivesia paniculata* | 2 |
| *Mimulus pygmaeus* | 2 |
| *Polygonum polygaloides* ssp. *esotericum* | 4 |

**6. Other Forest plant program highlights**

Sensitive plant occurrences monitered in FY 93:

| | |
|---|---|
| *Antennaria flagellaris* | 7 |
| *Calochortus longebarbatus* var. *longebarbatus* | 22 |
| *Collomia larsenii* | 1 |
| *Eriogonum prociduum* | 2 |
| *Galium glabresens* ssp. *modocense* | 1 |
| *Ivesia paniculata* | 3 |
| *Mimulus pygmaeus* | 2 |
| *Polygonum polygaloides* ssp. *esotericum* | 1 |
| *Rorippa columbiae* | 1 |

New Special Interest Plant occurrences FY 93:

| | |
|---|---|
| *Eryngium mathiasiae* | 3 |
| *Iliamna bakeri* | 1 |
| *Pogogyne floribunda* | 3 |
| *Thermopsis macrophylla* var. *argentata* | 6 |

Met with Mike Dolan (BLM-Alturas), Gary Schoolcraft (BLM-Susanville), and Beth Corbin and Kim Earll, of the Lassen National Forest, and surveyed for *Polygonum polygaloides* ssp. *esotericum*. During this time we found 2 new populations each of *Gratiola heterosepala*, and *Pogogyne floribunda*, and 3 new populations of *Polygonum polygaloides* ssp. *esotericum*.

Extensively mapped and documented the *Mimulus pygmaeus* distribution in the Beeler Reservoir Drainage.

Assisted private forester in surveying for *Mimulus pygmaeus* and *Calochortus longebarbatus* var. *longebarbatus* in proposed timber sale areas around Egg Lake, and provided information to public and private agencies about sensitive plants in and around Forest lands.

Met with Beth Corbin, Forest Botanist on the Lassen National Forest to discuss program developement and organization.

Collected *Calochortus longebarbatus* var. *longebarbatus* bulbs for Dr. Peggy Fielder of San Francisco State University, for use in a genetic study of *C. longebarbatus* var. *longebarbatus* and *C. longebarbatus* var. *peckii*.

Took photos for the FY 94 Wildflower Week display on the Warner Mountain Ranger District.

Attended workshop on Monitoring Change in Plant Communities and Rare Plant Populations.

**PLUMAS NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Plumas has a permanent full-time Forest Botanist, Linnea Hanson. Lawrence Janeway was hired as an NTE Assistant Forest Botanist and Stacy Scott is the permanent full-time Milford District Botanist.

The District Sensitive Plant Coordinators for FY 93 were:

Beckwourth RD-Shannon Downey, Range Conservationist
Greenville RD-Yvonne Cougoulat, Biological Technician
La Porte RD-Karen Lee, Biological Technician
Oroville RD-Alex Cole, Forester
Milford RD-Stacy Scott, Botanist
Quincy RD-Dave Johns, Forestry Technician

District Botanists for FY 93 were:

Beckwourth RD-Steve Klukkert, Garrett Gibson, Laurie Lamm
Greenville RD-Hal Durio
La Porte RD-Loren Gehrung and Gail Kuenster
Oroville RD-Barbara Castro, Jacque Jurewicz, Josephine Guardino and Justine Biddison
Milford RD-John Dittes, Diane Mastalir, Kim Davis, Margaret Stelmick, and Jilue Niceswanger
Quincy RD-Jim Battagin

Volunteers assisted the Plumas Plant Program with their knowledge of plants of the area. Vern Oswald assisted with *Clarkia mosquinii* and *Sanicula tracyi* taxonomic questions. Perrie Cobb volunteered her time assisting with surveys for *Monardella stebbinsii* and *Clarkia mosquinii*.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

| | | Acres Surveyed | BE's |
|---|---|---|---|
| Timber | 35 Salvage Sales | 7,962 | 24 |
| | 28 Green Sales | 5,767 | 12 |
| Range | 10 Allotments | 2,030 | 2 |
| | 1 improvement | 5 | 1 |
| Fire | 1 camp site | 5 | 0 |
| | 4 underburns | 920 | 4 |
| Resources-special uses, recreation, mining claims | | | |
| | 32 projects | 186 | 11 |
| Watershed | 15 Rehabilitation projects | 113 | 13 |
| PLUMAS NF TOTALS | | 13,988 | 67 |

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

CONSERVATION STRATEGIES:

Continuation of the ecological investigation of *Ivesia aperta* and *Ivesia sericoleuca* as a Master's Thesis by John Dittes. The primary emphasis of this project is to characterize and compare the seed germination,

seedling recruitment, population demography and habitat characteristics associated with these two closely related species. Milford RD collected grazing utilization data on two allotments and analysis with percent grazed with confidence intervals and site description given. Forest Botanist began field surveys for *Monardella stebbinsii*. Assistant Forest Botanist began a botanical investigation of *Clarkia mosquinii* and field surveys for *Monardella follettii*. Forest Botanist participated in field trip with Six Rivers and Lassen to review the variations in *Sanicula tracyi*. Forest Botanist conducted a field trip with Dale McNeal, to visit *Allium jepsonii* locations on the forest.

DATA:

Greenville Botanist updated the sensitive plant database with all known locations on the Plumas. These were all transferred to quad maps to enter into GIS. Updates to the Greenville and Milford Herbaria continue. Reviewed Glenn Clifton's Flora for the Plumas National Forest and Vern Oswald's Butte County Flora.

MONITORING:

Monitoring has continued to assess the impact of activities in timber sales on 2 sensitive plant species, *Fritillaria eastwoodiae* and *Penstemon personatus*. *Ivesia aperta* and *I. sericoleuca* monitoring has continued to study trends in demography and plant vigor.

CHALLENGE COST SHARE PROJECTS:

Isozyme analysis of the variations of *Fritillaria eastwoodiae*, *Vaccinium coccinium* and *Pinus washoensis* has continued with Jim Pushnik of California State University, Chico. An evaluation of the sensitive plant monitoring and predictive modeling has continued with Ulla Yandel and Barbara Seeger from the University of Nevada, Reno. A botanical investigation of *Senecio eurycephalus* var. *lewisrosei* has continued with The Nature Conservancy. Range exclosures to assess the impacts of grazing on *Ivesia aperta*, *Ivesia sericoleuca* and *Astragalus lentiformis* have been contructed by Plumas Corporation.

WILDFLOWER CELEBRATIONS:

The display, "Where Have All the Wildflowers Gone" was used at the Endangered Species Fair, California Native Plant Society Wildflower Show. Field trips to the west shore of Lake Almanor, locations of *Clarkia mosquinii* and locations of *Astragalus pulsiferae* with the California Native Plant Society were sponsored by the Plumas NF.

PROGRAM DEVELOPMENT:

Sensitive plant lists, forms and procedures were updated. Forest and Assistant Forest Botanist conducted an orientation for district botanists and a training session on writing plant BE's. Lawrence Janeway conducted a *Carex* training session and Rob Russell from Plumas Corp conducted a field tour of the revegetation of Wolf Creek and Greenhorn Creek.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *283,142* |
| Contributed funds & cost-share from non-Forest Service sources | $ |
| **Total Forest Plant Program** | $ *283,142* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| SENSITIVE SPECIES | OCCURRENCES |
|---|---|
| *Astragalus lentiformis* | 8 & 2 extensions |
| *Fritillaria eastwoodiae* | 2 extensions |
| *Ivesia aperta* | 1 |
| *Ivesia baileyi* | 1 |
| *Ivesia sericoleuca* | 3 |
| *Lupinus dalesae* | 1 |
| *Penstemon personatus* | 1 & 3 extensions |
| *Senecio eurycephalus* var. *lewisrosei* | 2 |
| *Vaccinium coccinium* | 1 & 3 extensions |
| PROPOSED FOR SENSITIVE STATUS | |
| *Allium jepsonii* | 6 |
| *Astragalus pulsiferae* | 2 & 1 extension |
| *Clarkia mosquinii* ssp. *mosquinii* | 4 |
| *Clarkia mosquinii* ssp. *xerophila* | 4 |
| *Mimulus pygmaeus* | 2 |
| SPECIAL INTEREST | |
| *Carex geyeri* | 1 & 1 extension |
| *Cypripedium fasciculatum* | 2 |
| *Drosera rotundifolia* | 2 |
| *Taxus brevifolia* | 2 |
| *Trifolium lemmonii* | 5 |
| *Viola tomentosa* | 1 |

**6. Other Forest plant program highlights**

SPECIAL INTEREST AREAS (SIA'S):

Robin Troestle, an intern from California State University, Chico completed a draft Management Guide for the proposed MacNab Cypress SIA.

ECOSYSTEM MANAGEMENT PROJECT:

Butterfly Valley Watershed Project-Development of a management plan to include public land, private industrial and residential land. Forest Botanist is the project leader with Rob Russell, of Plumas Corp and the Quincy District Botanist as the planning core for this project. Plumas Corp has been conducting stand and fuel exams through a Challenge Cost Share with the Plumas NF.

WATERSHED REHAB PROJECTS:

Walker Mine Rehabilitation: Forest Botanist coordinated involvement of the Chico Genetic Resource Center and field assessments of the tailing work. Quincy District Botanist developed a plant list for the area and a list of possible plants for use in the rehabilitating each habitat type. Collections of sedge and lupine seeds were conducted by the Quincy District Botanist and Assistant Forest Botanist.

Clarks 2000 and Squaw Valley Creek Waterfowl Project-Milford District Botanist has offered botanical assistance for these projects.

Red Clover II-Quincy District Botanist has offered botanical assistance for this project.

Willow Creek Stringer Meadow-Greenville District Botanist has produced a botany report that includes the major botanical species and a determination of the historic species in the meadow.

Quincy District Botanist has developed a live-staking species list and instructions for using live-stakes.

AIR QUALITY PROGRAM ($5,000 in air quality funding)

Forest Botanist attended Air Resource Meeting and Fuels Management Symposium as the Air Coordinator from the Plumas. Established the two remaining monitoring locations that were identified for tree and rock lichen monitoring in the Bucks Lake Wilderness with assistance from Oroville and Quincy District Botanists. Forest Botanist attended the Crustose Lichen training to learn about lichens on rocks.

NATIVE SPECIES REVEGETATION:

Native grass seed has been collected for revegetation projects by La Porte, Milford and Quincy District Botanists. Quincy District Botanist collected legume and forb seeds to add nitrogen fixing and biodiversity to the grass component of the seed mix for revegetation. La Porte District Botanist has planted and evaluated native grass seed trials on three different sites. Beckwourth District Botanists planted approximately 10 acres of Red Clover Valley with locally collected *Poa secunda* and *Elymus elymoides*. Quincy District Botanist has been working with the Sierra Valley Wholesale Nursery to acquire native species for revegetation work. Quincy District Botanist also helped conduct a California Native Grass Association class on native grasses and their use.

PLANT COMMUNITIES

Forest Botanist assisted in the review of the Mixed Conifer Guide and introduction to Ecological Unit Inventory. Milford District Botanist collected plant community composition data to compare the impacts of tilling and biomass.

**SAN BERNARDINO NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Forest continued to fund 1.8 permanent FTE botanists, one Forest Botanist located in the Supervisor's Office and one District Botanist located on the Big Bear Ranger District. However, the Big Bear Ranger District Resource Officer position was abolished and the District Botanist has absorbed 50% of those duties. These positions are funded at approximately 50% from appropriated wildlife dollars; additional funding comes from cooperative accounts and other program areas such as recreation, timber and lands.

The Big Bear Ranger District hired 4 employees during FY 93. Jody Sawasaki was converted from a 180-day appointment to an NTE 1 year in February. Michael Gonella and Rebecca Yahr both returned from the previous year on 180-day appointments. Dirk Rodriguez, a 13-13 firefighter with a Botany degree, was hired on a detail.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Plant surveys were conducted on a variety of projects including:

| TYPE | NUMBER OF PROJECTS | ACRES/MILES |
|---|---|---|
| Fuelwood Sales/Site Prep/TSI areas | 1 | 50 acres |
| Utility Lines | 2 | 6 miles |
| Mining | 4 | 80 acres |
| Hiking/Biking Trails | 3 | 50 acres |
| Organizational Camp Developments | 2 | 2 acres |
| OHV Routes | 1 | 3 miles |
| Land Exchanges/Acquisitions | 2 | 305 acres |
| Ski Areas | 1 | 2 acres |
| Other Recreation Projects | 2 | 70 acres |
| Roads | 2 | 1 acre |
| Misc. | 7 | 257 acres |

Consultants conduct plant surveys and complete NEPA documentation on a number of projects on the Forest each year. In these cases Botanists work with the consultants on survey needs and document review. These projects include pipelines, utilities, electronics sites, rights of ways and trails.

Biological evaluations were completed or are in progress for all activities that have potential to affect sensitive plant species.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

**Conservation Planning:**

The USFWS has begun work on listing packages for several sensitive species on the Forest. Botanists worked with USFWS to provide information on the current status of each of these species.

The USFWS proposed five plant species endemic to carbonate substrates for listing as endangered on November 19, 1992, with the final rule yet to be published. During FY 93 botanists responded to numerous

inquiries regarding the plants and the listing from the Washington Office, USFWS, mining companies and the press. We continued to informally conference with USFWS on projects affecting these species.

Work on the Habitat Management Guide (HMG) for the species mentioned above continued. Activities included obtaining information identified by the planning team as necessary to complete a conservation strategy. Information acquisition focused on revegetation potential and techniques, vegetation description, additional population surveys and genetic variation of *Lesquerella kingii* ssp. *bernardina*. One meeting was held with the HMG planning team in October, 1993.

We developed an Interagency Agreement with the Bureau of Mines and the Riverside Fire Laboratory to complete a spatial data analysis using geographic information system technology. Jenny Rechel of the Fire Lab agreed to digitize or obtain five data layers. All of these layers are either totally or nearly completed. The Bureau of Mines agreed to digitize or obtain an additional five layers; one of these layers has been completed.

Digitized Forest-wide threatened, endangered and sensitive plant location information for 38 species. Known locations of CNPS watch plant species were also digitized. Almost 2,000 polygons were digitized into Autocad and then transferred into DWRIS. This digitizing was part of a larger effort to develop 12 Forest-wide data coverages in GIS format in preparation for Project 615.

We continued to provide voucher specimens of many native plant species to Tim Krantz for the Flora of the San Bernardino Mountains. We also reviewed the draft of this publication for accuracy.

Botanists are participating in development of a Coordinated Resource Management Plan for the Big Bear Basin. The City of Big Bear Lake, USFWS, Soil Conservation Service, California Department of Forestry, CalTrans, the Municipal Water District, the Big Bear Community Services District, the University of Redlands and private entities have been involved.

**Monitoring:**

We began developing a monitoring program for documenting effects of off-highway vehicle use on native vegetation. This plan will be finalized and implemented in FY 94.

We completed qualitative pebble plain monitoring activities at all sites and quantitative monitoring at North Baldwin and Gold Mountain pebble plains.

We completed quantitative monitoring of *Thelypodium stenopetalum*, the federally endangered slender-petalled mustard, at Belleville Meadow.

We completed monitoring of effects of fuelwood harvest on *Phlox dolicantha* and effects of recreation special use events on *Mimulus purpureus*, *Arabis parishii* and *Castilleja cinerea*.

We wrote a proposal to the Friends of Big Bear Valley Preserve for a personal computer to manage our ever-growing databases of population and community level data. The Friends approved the proposal and purchased a beautiful new IBM compatible, 66 megahertz 486 computer with a 340 megabyte hard drive and 16 megabytes of RAM.

**Revegetation and Restoration:**

The Forest planned revegetation projects in the Deep Creek watershed to restore riparian habitat and seed unauthorized roads. Implementation of the project will be carried out in FY 94.

The Big Bear District botany program implemented a revegetation plan for Gordon Quarry that compares 8 different revegetation treatments including seeding, transplanting and planting containerized

stock of varying sizes. This project is being completed as a Challenge Cost Share by the Forest Service, California Department of Fish and Game and Specialty Minerals, Incorporated. Specialty Minerals reshaped the quarry and dug the 240 treatment blocks. We planted salvaged plants, gallon sized stock and tall pot stock. We continued to collect seed for the three seeding treatments.

Maile Neel participated as a team member in designing a mine reclamation course. This involved attending several planning meetings and developing the revegetation section of the course. The course will be taught in FY 94.

In March, 1992, a front end loader from the local county landfill entered an area closed to vehicles within the Holcomb Valley/North Baldwin Lake Special Interest Area. While in the closed area the loader damaged pebble plain and pinyon woodland habitats, leaving ruts up to 2 feet deep in some of the wetter areas. After working diligently on the investigation and rehabilitation plan, the District received over $174,000 to repair the damage. We began decompacting the soil in March but the money arrived too late in the season to do any planting this year. Throughout the summer we collected seed of 15 native pebble plain species. Over the next 3-4 years we will continue to collect seed, have plants grown and plant those plants into the degraded site.

We convened a "technical review team" to review mined-land revegetation activities on the Forest. In November 1992, representatives from the County of San Bernardino, the California Division of Mines and Geology, US Fish and Wildlife Service, Joshua Tree National Monument and the California Department of Fish and Game joined us for a two-day field trip designed to provide feedback to the mining companies on revegetation efforts.

We developed and implemented a cooperative agreement between the Forest and The Center for Arid Land Restoration at Joshua Tree National Monument whereby we analyzed data they had collected on vegetation reestablishment on abandoned mine sites within the Monument. We also assisted in writing the final report for this study.

**Protection and Improvement of Habitat for Sensitive Plant Species:**

The Arrowhead Ranger District constructed fence around habitat for *Orthocarpus lasiorhynchus* that occurs adjacent to a fire station.

Began working with Arrowhead Ranger District on a protection plan for *Lilium parryi* within an organizational camp.

Began working with USFWS on further protection of *Dodecahema leptoceras* habitat after it was discovered that a bulldozer or other large equipment had traveled through occupied plant habitat during winter floods.

Fences at all pebble plain sites were patrolled and maintained by: botanists; Fire Prevention Technicians Mark Hensley and Brenda Lindsay; Fire Suppression staff from the Fawnskin Station; and Off-Highway Vehicle Patrols Greg Hoffman and Tom Johnston.

Fences protecting *Thelypodium stenopetalum* at Belleville were patrolled and maintained by Fire Prevention Technician Mark Hensley and Botanists.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | *$101,800* |
| Contributed funds & cost-share from non-Forest Service sources | *$ 91,267* |
| **Total Forest Plant Program** | *$193,067* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

*Lilium parryi* 1
*Orthocarpus lasiorhynchus* 2[1]

[1] One population located by Jerilyn Hirshberg of JBH Biological Surveys.

In addition, occurrence boundaries were extended for 1 occurrence of *Streptanthus bernardinus*, 1 occurrence of *Monardella nana* ssp. *leptosiphon* and 1 occurrence of *Galium californicum* ssp. *primum*. Doug Stone of EA Engineering, Science, and Technology located an extension for 1 occurrence of *Monardella macrantha* ssp. *hallii*.

**6. Other Forest plant program highlights**

**Interpretation, Education and Networking, External:**

Attended a California Dept. of Fish and Game meeting to begin looking at recovery and study needs for the state and federally listed endangered *Dodecahama leptoceras*.

Provided input to the R5 Freedom of Information Act Requests biological evaluation.

Two articles on Big Bear's botanical diversity were published in *Natural History Magazine*. These articles, by Dr. Robert Mohlenbrock, were in the "This Land" column. These articles featured plants endemic to carbonate soils (March 1993), pebble plains (June 1993). Maile's photographs were used with the pebble plains article. Future columns will feature Garner Valley and Joshua Trees.

Worked on the draft Fish and Wildlife Program document for the Forest.

In order to celebrate wildflowers, the Big Bear Ranger District developed a wildflower t-shirt that features many of our beautiful and rare plant species.

Botanists gave presentations to many groups including the Association of Special Districts, all classes from local elementary and middle schools, naturalists and cabin leaders for the Orange County Outdoor Schools, members of Rancho Santa Ana Botanic Garden. We also led several wildflower walks for the public and for organizational camps.

Botanists served on the exhibit design team for the Big Bear Ranger District Visitor Center. We assisted in developing themes, developing exhibits and in writing and evaluating text.

**Interpretation, Education and Networking, Internal:**

Completed a sensitive plant information notebook for one district, with other district notebooks mostly completed.

Facilitated a 1/2 day session on monitoring and Species Management Guides at the Regional Botany Meetings in Sacramento. We also developed and presented a poster display of current revegetation efforts.

We gave a presentation at a national workshop on limestone mining. The presentation focused on the challenges of managing plant species that are endangered by mining activities.

We participated in 9 visits from Regional and Washington office staff. On all visits we led portions of field trips or gave slide presentations on the unique resources and challenges we face on an urban forest. Visitors included Dale Bosworth; Beverly Holmes; Don Eagleston; Ed Whitmore, Andy Leven and Chris Jauhola; select members of the Regional Management Team; Lynn Sprague, Sylvia Arbelbide and Jim Shevock, Anne Bradley; Chris Topik; and Chief F. Dale Robertson (Mr. Robertson even got a t-shirt to take home with him!). In addition we participated in a General Management Review.

Plumas NF botanist Linnea Hanson visited the Forest for a week in May. During her stay she assisted with planting at Gordon Quarry, visited a pebble plain and learned about the types of monitoring we do on the Forest.

**Expand Knowledge of Sensitive Plants and Their Habitats:**

Continued with the Challenge Cost Share Agreement with Bruce Baldwin of Duke University to study genetic differences between *Layia ziegleri*, a locally endemic sensitive species, and *L. platyglossa*, a common species. Preliminary work is done and project should be completed by November 1993.

We continued to work on a study of Geographic Variation in Munz's Hedgehog Cactus begun in FY90. Work this year focused on data analysis and report writing.

**Graduate Student Activities:**

Continued to assist Diane Elam with her work on *Lilium parryi* and *Lilium humboldtii*, and assisted Alison Graf with her work on the genus *Monardella*. Other graduate students were assisted with locational information, collecting permits, assistance with special use permits for study sites, etc. for studies on several species of plants.

Mike Gonella (San Jose State University) continued studying vegetation growing on carbonate substrates in the San Bernardino Mountains. He is comparing sites occupied by four of the five species endemic to carbonate substrates with randomly selected sites. To date he has sampled 219 plots and has conducted preliminary data analysis. These data will be used to assess cumulative impacts of vegetation loss as well as to develop revegetation standards. Mike completed his 1992 and 1993 field work as an employee. He will return in FY 94 to finish his data analysis.

Bill Straits (California State University, Fullerton) is comparing isozyme variation within and among 8 sub-populations and two populations of *Lesquerella kingii* ssp. *bernardina*.

**Training:**

Botanists attended training in habitat restoration, agreements, and the annual R5 Botany Workshop.

**Other:**

Maile Neel, Big Bear District Botanist was recognized by receiving the Regional and National Threatened, Endangered and Sensitive Species Award for Botany.

We assisted in organizing and implementing a volunteer tree planting day on Earth Day. Challenge by Choice, a local private company committed to environmental education and leadership did an outstanding job in organizing and advertising the event. They rounded up over 80 volunteers to plant trees and enjoy presentations on wildflowers, forest ecology, raptor rehabilitation and tree planting.

Wayne Ferren (University of California at Santa Barbara) has been hired by the Environmental Protection Agency to describe wetland types in coastal draining southern California. We assisted Wayne during his visit to the San Bernardino National Forest by taking him to or describing locations of various types wetland types and by assisting with data collection and plant identification. On the Forest he found some of the most species rich wetlands in his entire study area (South Fork Meadows), the only example of an alkalai lake in the study area (Baldwin Lake) and the only glacial related wetland in the study area (Dollar Lake).

We participated on the planning team for the Forest Off-Highway Vehicle Strategic Plan. This effort was in cooperation with American Honda Motor Corporation and a representative for the California Green Sticker Commission.

We completed two OHV resource management projects. The Rose Mine Valley project involved fencing off a seasonally wet area that had become degraded by recreational mud play. The second project involved closing numerous illegal roads entering a roadless area and proposed wilderness. These projects were led by Greg Hoffman, OHV patrol person. Fire fighters Mark Patino, Greg Mesa, Doug Burns and Garland Fort were the diehard crew members for both of these efforts.

We coordinated a volunteer work day where we planted native plants in closed OHV trails at Cactus Flat. We had over 100 participants from the Sierra Club, American Honda Motor Corporation, and numerous motorcycle clubs. We planted 250-300 native plants that had been grown for us by Joshua Tree National Monument. We also collected large amounts of native plant seed for future revegetation efforts. In addition we constructed a hiking trail into the Champion Joshua Tree, in the heart of a roadless area.

Botanists participated in the national fiscal review for expenditure of wildlife and TES appropriations.

**SEQUOIA NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Sequoia had one partially funded District Botanist. Other workforce needs were accomodated by four District wildlife biologists, the Forest wildlife Biologist and 3 seasonals as collateral duties. One biologist and a seasonal recieved supplemental training to improve plant skills on the Forest. Staff time on plant related subjects was estimated at approximately 131 person days.

Due to lack of funding, the Sequoia will be losing the District Botanist. All sensitive plant related subjects will be covered as colateral duties in FY 94.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

| *Project* | *Acres Surveyed* | *Biological Evaluations* |
|---|---|---|
| Sensitive Plant Re-flagging | 185 | 0 |
| Salvage Sale | 2 | 8 |
| Green Sales | 361 | 2 |
| other | 302 | 11 |
| Ecosystem Mgmt | 350 | 1 |
| Total | 612 | 9 |

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

A demographic study of *Calochortus westonii* is continuing in its third year by means of a five-year Challenge Cost Share Agreement with San Francisco State University. Results from the study will be used for revision of the *Calochortus westonii* Species Management Guide.

*Calochortus westonii* and *Delphinium inopinum* populations flagged and mapped during the 1991 and 1992 surveys were monitored and re-flagged where necessary to continue protection from logging, fuels treatment and planting activities.

Through our Public Affairs Department, a pressed wildflower guide was developed for Blackrock, a remote information/ranger station.

**4. $$ spent on TES plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *23,836* |
| Contributed funds & cost-share from non-Forest Service sources | $ *3,000* |
| Knutson-Vandenberg funds | $ |
| Total Forest Plant Program | $ *26,836* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

*Eriogonum breedloveii shevockii* - 1 new occurrence; reverified 2 historical populations.
*Oreonana purpurascens* - 1 new occurrence
*Clarkia springvillensis* - 4 new occurences

Kern River Daisy - monitored known populations; found 1 new population near Sacratone Flat.

Bald Mountain Potentilla - monitored known populations

**6. Other Forest plant program highlights**

An ecotype plant species inventory was completed on the Hot Springs Ranger District for the South Creek Ecosystem Management Environmental Assessment.

T. Holtsford and K. McCue from the University of Missouri-Columbia came out during the Spring of 1993 to do surveys for Springville clarkia, a federally proposed and state listed endangered plant species on our district. They are doing a research project on many different *Clarkia* spp. The district provided them with Forest information and access to conduct their study, including plant locations, maps, keys, and our species management guide. They have reported all new locations they have identified both to the District and to the California Natural Diversity Data Base. Once their research is complete, they will provide us with their full report.

Included sensitive plants in brochure designed for the South Fork Wildlife Area (Lake Isabella).

Planned strategy for protecting the Bald Mountain Potentilla in the Troy Meadow Campground. (Fencing, signing, coordinating with other resources)

Shared plant monitoring data with Forest Genetics Lab - UC Berkeley for use at the Regional Plant Monitoring Workshop.

Field visit from botanist Dr. Jan Beyer of Riverside Lab to discuss and analyze the reason why many Kern River Daisy populations did not appear this year.

Forest collected seeds for bioindicators and utilized botoany program personnel to assist in ozone monitoring.

Southern California Edison surveyed approximately 100 acres for sensitive plants as part of the FERC relicensing for Kern River Plant #3 and related structures (Transmission corridors, flume etc.)

**SHASTA-TRINITY NFs** **********

**1. Describe the botanical expertise and workforce on your forest**

The Shasta-Trinity NFs botany program is administered by a full-time GS-11 Forest Botanist, Julie Nelson, in the Supervisor's Office. She is assisted by two NTE GS-7 professional series botanists, Vivian Parker Long and Sue Pappalardo. Vivian served as acting Forest Botanist this year while Julie was on maternity leave. Sue assisted with Ecological Unit Inventory work after the sensitive plant field season was over. Seasonal technician Randi Anderson, currently studying for a degree in ethnobotany, conducted a systematic sensitive plant survey of the Battle Creek cattle allotment in the Trinity Alps wilderness.

In addition, each of the seven ranger districts has a sensitive plant coordinator. The botany program is part of the Biological Sciences staff unit, which includes the ecology, wildlife, fisheries, and range programs.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

Sensitive plant surveys were conducted on 59,200 acres of salvage sales, recreation projects, fish habitat improvement projects, watershed restoration projects, grazing allotments, a green sale, a vegetation management project, and an ecosystem management analysis area.

Fifteen project BEs were completed.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

* Finished sensitive plant handbook, provided districts with multiple copies of these and other training materials. Held field and office training sessions with four districts. Provided botanical expertise to all districts.

* Accomplished systematic survey of *Madia stebbinsii* through a challenge cost-share contract with Niall McCarten and the Mendocino NF.

* Hosted Shasta snow-wreath search party with participants from BLM, USDA Forest Service, California Fish & Game, California Native Plant Society; five new populations discovered.

* Began biological investigations into the ecology of *Calochortus longebarbatus* var. *longebarbatus* in order to develop a conservation strategy for this species.

* Began a common garden for *Sedum laxum* ssp. *flavidum* in order to help resolve taxonomic problems associated with this taxon. Have collections from eight different locations.

* Collected seed, and established experimental plots for artificially seeding *Phacelia cookei*. These plots were established adjacent to plantations which occur within and around *Phacelia cookei* populations. The plots were subjected to two different types of disturbance regimes and a control, and will be monitored to determine the plant's response to these regimes.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *82,660** |
| Contributed funds & cost-share from non-Forest Service sources | $ *3,600* |
| **Total Forest Plant Program** | $ *85,260* |

*70,660 SO; 12,000 RD coordinators

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| | |
|---|---|
| *Epilobium siskiyouense* | 1 |
| *Eriogonum umbellatum* ssp. *humistratum* | 3 |
| *Erythronium citrinum* var. *roderickii* | 2 |
| *Galium serpenticum* ssp. *scotticum* | 1 |
| *Madia doris-nilesiae* | 8 |
| *Minuartia rosei* | 3 |
| *Neviusia cliftonii* | 6 |
| *Sedum laxum* ssp. *flavidum* | 6 |
| *Trillium ovatum* ssp. *oettingeri* | 3 |

**6. Other Forest plant program highlights**

* Collected on-site grass seed from the Shasta Lake District as part of a partnership project with the Rocky Mountain Elk Foundation to increase food for large game in the Wheeler Ranch area (Squaw Creek Ecosystems Management Area). The seed will be grown by Shasta College range management students and planted out in plugs in an experimental plot. A variety of treatments will be studied to determine the best method for eradicating star-thistle from the site.

* Collected on-site grass seed from the Horse Pasture meadow on South Fork Mountain as part of a project funded by the Chief's Riparian Initiative to restore riparian areas. The seed will be grown by local Hayfork students as well as Shasta College students for revegetation purposes.

* Collected eighteen samples from fourteen different native grass species for germination/feasibility studies by Redwood City Seed Company as part of a cost share agreement with Region 5 set up to identify grasses which can be used for restoration/revegetation purposes.

* Collected seed samples from the type localities for two rare Clarkias, *Clarkia borealis* ssp. *arida* and *C. b.* ssp. *borealis*, for a study by Leslie Gottieb at UC Davis (Department of Biol. Sci., Evolution and Ecology). Gottlieb hopes to resolve the taxonomic questions associated with these and related Clarkias. The impetus for this study came from Jennie Haas, botanist on the Stanislaus NF.

* Recommended native plant species and sources for landscaping purposes to the Forest Landscape Architect.

* Provided native plant species information and recommendations for the Blue Bird Mine restoration project, funded by the Chief's Riparian Initiative, for the Big Bar Ranger District.

* Worked with youngsters from the McCloud Elementary School as part of the Adopt-A-Watershed Program at Trout Creek and also at the school. We discussed dispersal mechanisms and seed adaptations, collected seeds, and thought up our own "designer" seeds. We also discussed Native American uses of native plants found at the site.

Began beta-testing of ARABIS, the R5 rare plant database being developed by Steve Matthews and Lisa Hoover of the Six Rivers NF.

**SIERRA NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Sierra continues to fund one permanent, full-time botanist stationed at the Supervisor's office. Botanist Scott Wilson began a fourth year as temporary botanist, worked intermittently through the winter, and took a permanent job in May. Two NTE 1 year botanists, Jim Jones and Kelly Gallagher, worked from June through September, mostly funded by salvage timber dollars. They spent most of June conducting an ecological survey for a candidate RNA using funds transferred to the Sierra from the RO. Helen Knost worked intermittently during the winter helping the botanist with miscellaneous office tasks.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

| | NUMBER AND *TYPE OF PROJECT* | NUMBER *SURVEYED* | NUMBER OF *B.E.s WRITTEN* |
|---|---|---|---|
| | 6 green timber sales | 4 | 6 |
| | 15 salvage timber sales | 3 | 8 |
| | 12 misc. small sales | 6 | 3 |
| | 6 special use permits | 6 | 5 |
| | 4 trail construction projects | 4 | 2 |
| | 5 meadow repair projects | 4 | 1 |
| | 1 prescribed burn | 1 | 1 |
| | 1 fuel break | 1 | 0 |
| | 1 scenic byway | 0 | 1 |
| | 1 employee housing complex | 1 | 1 |
| | 1 herbicide EA | 1 | 1 |
| TOTAL | 53 | 31 | 29 |

In addition, botanical input was provided to the Ansel Adams/John Muir wilderness plan, a lodgepole pine management EA, and a highway repair project which required seeding for erosion control in a Botanical Area.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

COLOR BROCHURE - GUIDE TO THE SENSITIVE PLANTS OF THE SIERRA NF.

At the end of FY 93, the Sierra committed funds to the production of a full-color booklet showing photographs of each of our 20 sensitive plants. The booklet will be available by mid-December. It is intended for in-house use by any employee willing to help with sensitive plant inventory and management.

STUDY OF THE EFFECTS OF DISTURBANCE ON COLLOMIA RAWSONIANA

California State University, Fresno graduate student Eric Liskey concluded his study on the effects of logging and grazing treatments on *Collomia rawsoniana* (Rawson's flaming trumpet). Eric took data on the response of this riparian-dependent perennial in 1991, before the treatments were performed, then in 1992 to assess the response of the plants. In FY 93, he spent approximately $2000.00 (cost to government of a

GS-7) worth of his own time in FY93 summarizing 2 years of data. Botanists Jim Jones and Kelly Gallagher gathered data for these plots for the second time since the experimental treatments.

The Forest fence about half of the 18 plots to exlude cattle, as in both 1991 and 1992 cattle grazing and trampling altered our ability to discern the effects of the logging treatments.

## REPRODUCTIVE ECOLOGY OF CARPENTERIA CALIFORNICA

Four years of data on the breeding system, pollination biology, and response to fire of *Carpenteria californica* (tree anemone) is being summarized. Seedlings from a 1989 wildfire continue to be monitored yearly. Isozyme analysis of leaves from three populations was conducted at the PSW genetics lab in Albany, CA.

## STATUS OF CALYPTRIDIUM PULCHELLUM

For the second year, all locations for *Calyptridium pulchellum* (Mariposa pussypaws) were monitored. In part, this was to provide information on the status of this species for the southern Sierra Foothills listing package assembled by the US Fish and Wildlife Service. The Botanist worked with Nature Conservancy volunteer Terri Funkner; Ann Mendershausen, a botanist from Mariposa) and Jack Kirk, a Mariposa county landowner with excellent occurrences of on his land.

## PUBLIC RELATIONS

Sensitive Plant Program slide presentations were given to the Wildflower Action League of Mariposa and the Fresno Audubon Society. The botanist took the members of the AAUW Garden Club on a field trip to see *Carpenteria californica* blooming and to discuss chaparral ecology and sensitive plant management. The local public television station conducted two television interviews with the botanist. Both were filmed on the Forest, one emphasized wildflowers rare and common, and the other featured *Carpenteria californica*, and our management of this species.

Joanna gave a presentation at the Pineridge District new employee orientation explaining the sensitive plant program and suggesting ways for people to assist in our goals.

## ECOLOGICAL UNIT INVENTORY OF JACKASS CREEK DRAINAGE

EUI botanist Alisa Durgarian contributed to the sensitive plant inventory in the process of mapping potential natural vegetation for this Ecosystems Management project. Four new sensitive plant occurrences were located within this 35,000 area on the Minarets Ranger District: 1 of *Trifolium bolanderi* and 3 of *Ivesia unguiculata*. These species occur in meadows, and we now have knowledge of which meadows have been surveyed and found NOT to have populations.

## INTERAGENCY COORDINATION

The Forest Botanist spent time in the field with botanists from Caltrans, BLM, USFWS, CNPS, and CSU Fresno. A field day with Ken Fuller of USFWS and Dr. Howard Latimer of CSU Fresno was spent visiting populations of *Calyptridium pulchellum* and *Carpenteria californica*, to assess their status for the Sierra Foothills listing package. Al Franklin of BLM, Ann Mendershausen of Mariposa,
and 2 Sierra NF botanists monitored *Clarkia biloba* ssp. *australis* populations along Highway 140. Caltrans biologists Dana York and Margaret Lawrence worked closely with the Forest Botanist on sensitive plant issues along Highways 168 and 140. CNPS planner Erin Noel spent a day on the Sierra with Joanna discussing goals and objectives shared by CNPS and the Forest Service.

In January, botanists from Yosemite National Park, Stanislaus National Forest, and the Sierra NF met in Yosemite Valley to discuss coordinating on management of *Allium yosemitense*, *Eriophyllum congdonii*, *Lewisia congdonii*, and *Carex tompkinsii*. The group decided that a Habitat Management Guide for the first three species would be the logical action, and that in FY 94 we will begin work on it, headed up by the Sierra NF.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ 62,600 |
| Contributed funds & cost-share from non-Forest Service sources | $ 2,000 |
| **Total Forest Plant Program** | $ 64,600 |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| *SPECIES* | *# NEW OCCURRENCES* |
|---|---|
| *Collomia rawsoniana* | 2 |
| *Eriogonum prattenianum* var. *avium* | 3 |
| *Ivesia unguiculata* | 8 |
| *Trifolium bolanderi* | 2 |

**6. Other Forest plant program highlights**

SECATE RIDGE RNA

Work toward establishing a 4500 acre blue-oak woodland RNA continued. The Forest nominated the RNA, and the RNAC transferred $2000.00 to the Sierra to conduct the ecological survey. Botanists Jim Jones and Kelly Gallagher completed the fieldwork for the eco-survey, and began work on the write-up.

SPECIAL FOREST PRODUCTS

The Minarets Ranger District contracted with Mater Engineering of Oregon to produce a plan to aid in rural diversification for the lumber-dependent town of North Fork. The aim is to shift the community from its dependence on lumber to a more wide-ranging use of forest products. The botanist worked with Catherine Mater of Mater Engineering Co. to determine which Sierra NF plants would be feasible for commercial use, and which should be discouraged. Issues such as genetic considerations and the possibility of inadvertent introductions of exotic pest plants have yet to be resolved.

REGION 5 BOTANY NEWSLETTER

Joanna edited the R5 BOTNEWS for the second year. BOTNEWS is a quarterly newsletter intended for R5 botany personnel to communicate among themselves and with our partners about current issues in botany.

**SIX RIVERS NF** **********

**1. Describe the botanical expertise and workforce on your forest**

Six Rivers supports one botanist to manage the program on a 960,000 acre Forest with 4 Ranger Districts. Technical and administrative support is also drawn from the Zone Ecologist. In FY 93, a biological technician was hired to assist the Forest Botanist in developing a Sensitive Plant Guide, completing biological evaluations and planning/implementating revegetation projects.

The Forest also used volunteers to accomplish Botany Program projects ranging from assistance with Sensitive plant monitoring, seed collection and revegetation planning. Volunteer time totalled 147 hours which is equivalent to approximately $1160.00 cost to government. In addition, 4 members of the resources staff at **Redwood National Park** assisted the program in the following ways: a) provided technical assistance with regards to exotic species control and revegetation, b) assisted in installing pre-burn fire plots to discern the effects of prescribed burning on vegetation.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

The intensity of timber sale and small sale activity was significantly reduced over last year. Projects implemented during this last FY emphasized the installation of fish structures, watershed rehabilitation and recreation related projects. The level of survey was based upon the potential habitat in the area and information about existing sensitive plant populations. The following chart displays the acres evaluated including office (database queries, airphoto review) review and the acres actually field surveyed.

| | Acres Evaluated | Acres Surveyed[1] |
|---|---|---|
| Small Sales (5) | 220 acres | 0 acres |
| F&W Projects (4) | 130 acres | 0 acres |
| Special Use Permits (5) | 188 acres | 10 acres |
| Watershed Projects (2) | 13 acres | 20 acres |
| Fire/Fuel Breaks (2) | 5 acres | 3 acres |
| Campgrounds/Trails (4) | 21 acres | 3000 acres |
| TOTAL | 577 acres | 3,033 acres |

15 BE's were completed as a result of the aforementioned surveys.

[1] Acres surveyed for some projects are pending further notice.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)**

FY 93 accomplishments departed from the traditional emphasis on project (particularly timber sale) surveys to a greater emphasis on the **fundamental** inventory, mapping and monitoring of sensitive plants and Botanical Areas. In addition, the program branched out to include tighter coordination and oversight with other disciplines involved in revegetation, namely watershed and fisheries. Marketing of the program intra-agency and externally (specifically related to sensitive plant and botanical area appreciation, and use of locally-collected natives in revegetation projects) maintained a strong presence within the program.

The following activities/projects served to meet the objectives of the Sensitive Plant Program:

## COOPERATIVE PROJECTS

* Entered into a cost-share agreement with an individual to survey for sensitive/rare plants within designated areas of the North Fork of the Smith River Botanical Area and to synthesize survey information related to *Arabis macdonaldiana* and subsequently map on the Forest Atlas.

* Entered into an agreement with Dr. Mike Messler of Humboldt State University's Department of Biological Sciences to conduct an electrophoresis analysis of *Bensoniella oregana* in order to determine the genetic make-up of the population on the Six Rivers and compare with populations in southern Oregon.

## INVENTORY, MAPPING AND MONITORING

* Surveyed for Sensitive/rare plants within the Horse Mountain Botanical Area. Mapped occurrences of findings and potential habitat on airphoto overlays. Produced tabular information describing habitat characteristics and distribution. The following species were identified as a result of the survey: *Sedum laxum* ssp. *flavidum*, *Arnica cernua*, *Antennaria suffrutescens*, *Lomatium tracyi*.

* Designed and implemented a pilot monitoring project for *Arabis macdonaldiana* in the North Fork of the Smith River Botanical Area. Objective of monitoring was to obtain a population estimate and ascertain population vigor.

* Designed and implemented a monitoring plan for *Bensoniella oregana*. Objective of monitoring was to map population and obtain cover estimates. Another component of the project was to monitor habitat change, specifically, characteristics related to a gully which dissects the habitat. Stream cross-sections were taken to ascertain bank stability over time. Photo points were installed to track the encroachment of incense cedar.

* Continued development of the Region 5, ARABIS database for storage of information related to Sensitive plants. Presented a program at the Annual Meeting which described the database and its applications. Conducted a training with the Pilot Forests for the beta testing of the database.

## MARKETING AND EDUCATION

* Developed a "Guide to the Sensitive Plants of Six Rivers National Forest" which included color photographs of the sensitive plants and their habitat, line drawings of each plant, plant descriptions, range and location information (to the quad and site), references and a glossary. Each page was laminated to make the guide field-worthy. Guides were distributed to the Districts and to SO Staff Areas. Purpose was to enhance appreciation of the Sensitive Plants on the Forest and to increase awareness of field-going personnel with regards to plant identification. The guide will also be distributed to other agencies in the area (NPS, BLM, CDFG).

* Conducted a Sensitive Plant Training on the Smith River National Recreation Area emphasizing Botanical Areas and management issues related to these areas and the rare plants therein.

* Presented a slide show to representatives of local timber companies (hosted by Simpson Timber Company) which addressed the Sensitive Plant Program on the Forest, a sample of the sensitive plants on the Forest and their habitats and various rare plant management issues.

* Conducted a hike for the North Group Sierra Club within the Horse Mountain Botanical Area as a part of **Wildflower Week**. The hike served to introduce members of the community to the area and to share information about rare flora, serpentine environments, plant communities and natural area management.

**4. $$ spent on TES plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | *$45,000.00* |
| Contributed funds & cost-share from non-Forest Service sources | *$ 5,500.00* |
| Knutson-Vandenberg funds | *$ 5,000.00* |
| **Total Forest Plant Program** | *$55,500.00* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| | |
|---|---|
| *Sedum laxum* spp. *flavidum* | 11 |
| *Arabis macdonaldiana* | 1 |
| *Lewisia oppositifolia* | 1 |

**6. Other Forest plant program highlights**

**RESTORATION WITH NATIVE PLANTS**

* Participated in a Cost-Share project involving the study of genetic variability in two grass species: *Elymus glaucus* and *Danthonia californica*. Seed and voucher specimens were collected according to the protocol and sent to the Siskiyou National Forest (the lead Forest) for analysis.

* Participated in a Cost-Share project which investigated the germination and yield of various grass species which can be used in revegetation efforts. Seed was collected for *Festuca californica*, *Stipa occidentalis* and *Elymus glaucus* according to the protocol and sent to the Redwood Seed Company (Mendocino NF was the lead for this project).

* Promoted the use of locally collected plants for revegetation for internal projects; provided technical advice by developing revegetation prescriptions for watershed, fisheries and engineering projects which included appropriate species mix, collection sites, timing of collection, propagation, erosion control measures and sources for natives.

* Developed a restoration prescription for the Horse Mountain Botanical Area which included an extensive literature review and consultation with professionals in the field. As a part of the prescription an experimental design for restoring an obliterated road was developed. Components of the design incorporate the following treatments: mulch, propagule by seed/transplant, low level fertilizer and control. The effectiveness (or the lack thereof) will be monitored annually over the next 3-5 years and less frequently beyond 5 years. In addition, native seed and cuttings were collected to be grown out under an agreement with the Hoopa Valley Nursery.

**BOTANICAL AREA MANAGEMENT**

* Mapped the plant associations and seral stages according to the Region 5's Ecology Program protocol. This information was then manuscripted for GIS applications. Information generated from this mapping project will serve as the foundation for developing Botanical Area Management Plans. As a result of this work, a paper was presented at the annual meeting of the **Natural Areas Association** in Maine entitled "Laying the Foundation for Botanical Area Stewardship: A Case Study in Inventory Methodology on the Six Rivers National Forest, Northwest California. This presentation was also made at a District as part of the Vegetation Classification Training conducted by the Zone Ecologist.

* Participated as a member of the LMP team to further refine management directives for Botanical Areas. Solicited involvement from the District Rangers in regards to specific directives for the Areas on their respective Districts.

* Installed signs in the Lassics Botanical Area to describe the intent of a road closure conducted at the beginning of the fiscal year.

## COOPERATIVE ENDEAVORS AND NETWORKING

* Cultivated a network of assistance and information sharing with Redwood National Park. With "hands-on" assistance from the Park's Resources Staff, installed plots according to the NPS Western Region's protocol to study the effects of fire on select plant communities within the Horse Mountain Botanical Area.

* Provided outside consultants with general information about rare plant occurrences within the vicinity of their project area. Total number of requests processed in FY '93 = 10.

* Participated in quarterly meetings of the northern botanists to discuss issues related to respective botany programs but also issues/concerns shared by all.

**STANISLAUS NF** **********

1. **Describe the botanical expertise and workforce on your forest**

SO: 1 GS-11 Ecologist (Ecology Program)
1 GS-11 biologist/botanist (Sensitive Plant Coordinator)

Districts:
1 GS-11 bio/botanist (Burnett)
1 GS-9 botanist (Haas)
1 GS-9 Intretive Specialist (botanist)
1 GS-7 NTE botanist
2 GS-5 NTE botanist
4 GS-5 Temp biotechs (botany)
7 GS-4 Temp biotechs (botany)

2. **Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

16,120 acres and input to 104 BEs

3. **Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.**

Groveland RD:

1. Presentation on wildflowers to Tenaya School.
2. Sensitive plant/wildflower walks on 3 days in May in the Trumbull Pk Botanical Area.

Summit RD:

1. Wildflower walks during the summer by the Interpretive services section and highlighted during wildflower week.

Calaveras RD:

1. Local flora/sensitive plant presentation to science teacher continuing education workshop at Calaveras Big Trees State Park.
2. Public display at District office for botany and sensitive plant program.

Supervisors Office:

1. Forest training conducted with help of Groveland RD in sensitive plant management.

4. **$$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | $ *171,000* |
| Contributed funds & cost-share from non-Forest Service sources | $ *6,000* |
| **Total Forest Plant Program** | $ *177,000* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

| | |
|---|---|
| *Silene invisa*: | one new occurrence |
| *Clarkia australis*: | 30 new occurrences |
| *Mimulus filicaulis* | 16 new occurrences |
| *Horkelia parryi*: | 3 new occurrences |

**6. Other Forest plant program highlights**

Floristic study conducted of pioneer plants in the Old Gulch Burn area.

Floristic study conducted for meadow rehab following a hazaardous waste dump closure.

Planning on cooperative projects with the District Heritage Program on ethno-botanical field guides was initiated.

Preliminary planning and feasibility on Challenge-cost share project to analyze genetic relationships of *Clarkia australis* and *C. virgata* was initiated with preliminary commitment of funds from Fiberboard and field expertise and lab analysis from Les Gotleib of UC/Davis. Gotleib visited Forest and collected seed for initial greenhouse phase of raising F1 and F2 generations. Offers of assistance was also received from the FS Genetics Lab in Placerville but their potential role in the project has not been determined.

**TAHOE NF** **********

**1. Describe the botanical expertise and workforce on your forest**

The Tahoe has a permanent full-time Forest botanist - Kathy Van Zuuk. The Forest also has a sensitive plant coordinator - Don Behrens. Each District Ranger assigns a sensitive plant coordinator who serves as a link between the district and the Forest botanist. The district plant coordinators are: Downieville RD - Heather Newell, Nevada City RD - Gary Cline, Foresthill RD - Gail Parn, Truckee RD - Gail Lynch, and Sierraville RD - Fred Kent.

In addition, the Forest had 8 NTE botanists on a forest crew in 1993 (all professional botanists in the 430 series). They were Donavon Bailey, Blaze Baker, Mary Levy, Emily Rodarmel, MeLinda Correll, Katie Chess, Ron Nelson, and Ethan Freid.

Other employees were also trained in sensitive plant identification and assisted in plant surveys.

The Tahoe also had 3 volunteers who provided botanical expertise in 1993. They included Dick Hanes, Linda Jones, and Reuvin Woodrow. Over 440 hours of botanical work was volunteered.

**2. Amount and/or types of projects/acres surveyed for and numbers of biological evaluations written for sensitive plants in FY 93**

| TYPE OF PROJECT | NUMBER OF ACRES |
|---|---|
| Salvage sales | 15,000 |
| Green timber sales | 20,000 |
| Special Uses | 100 |
| Recreation | 3,500 |
| Land Exchange | 2,000 |
| Wildlife | 100 |
| Silvicultural Treatments | 4,500 |
| Roads | 2,000 |
| Range | 800 |
| Fuelbreaks | 200 |
| TOTAL ACRES | 48,200 |

Seventy five biological evaluations were written.

**3. Describe your forest accomplishments in sensitive plant management in FY 93. (Include such items as species management guide development, challenge cost-shares, wildflower week celebrations etc.)**

The Tahoe completed one interim management guide for *Eriogonum umbellatum* var. *torreyanum* as part of a cost-share agreement with The Nature Conservancy. Graduate student, Tamara Kan, was the author of the guide.

The Tahoe celebrated Wildflower Week conducting two wildflower walks, improving a wildflower display for the front office and the Big Bend interpretive center, and visiting local schools.

An exclosure for the sensitive plant *Ivesia sericoleuca* was reconstructed. This exclosure was constructed last year and was vandalized by snowmobilers and damaged by heavy snows. It was reconstructed to be a take-down fence. Other habitat was improved for this plant by placing boulders across an illegal road

that lead to a large snag. The snag, which was being harvested by firewood cutters, was also moved to the road.

**4. $$ spent on the plant program during FY 93 by the following funding sources**

| | |
|---|---|
| Appropriated funds (all Forest Service sources & cost-share) | *$120,000.* |
| Contributed funds & cost-share from non-Forest Service sources | *$ 2,000.* |
| **Total Forest Plant Program** | *$122,000.* |

**5. Name of sensitive plant(s) and number of new occurrences discovered in FY 93**

*Penstomen personatus* - 1
*Fritillaria eastwoodiae* - 4
*Lewisia cantelovii* - 3
*Ivesia sericoleuca* - 5
*Silene invisa* - 4
*Phacelia stebbinsii* - 1

**6. Other Forest plant program highlights**

The botanical staff continued to be active in the environmental education program. Hikes were lead for 2 elementary school groups, 2 elementary and 1 junior high school were visited, and 4 hikes were lead for teachers, and other groups.

The forest botanist continues to give botanical input to large forest projects such as wild and scenic river suitability studies, older forest studies, and allotment management plans.

The forest botanist has been active in the development of a special products analysis for collection of botanical products on the forest.

Sensitive plants were monitored for vigor, reproduction, and threats. Some sites have been monitored for over 7 years.

The forest has initiated several ecosystem management projects. These require more botanical and ecological input than what has been done in the past.

The forest botanist actively participated in forest priority setting. This enabled the forest to actively plan and prioritize projects using known or needed plant information.

Several watchlist occurrences were discovered. They include:

*Viola tomentosa* -13
*Allium sanbornii* var. *congdonii* -2
*Cypripedium fasiculatum*-1
*Taxus brevifolia* -numerous occurrences
*Torreya californica* -3
*Drosera rotundifolia* -1

Sensitive Plant Habitat
Help
Conserve It